ASSESSMENT OF E-LEARNING EFFECTIVENESS ON EMPLOYEES

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Foreword

I would like to thank my supervisor Hans van der Meij, who was been a steady and patient support during the entire process of my thesis. He has been able to provide me with insights and feedback that have helped me with my thesis, while also mindful of the relatively large distance between me and the university.

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Summary

E-learning is an ever-increasing field of work. However, e-learning is developing more rapidly than the corresponding field of research that looks at the effectiveness of e-learning. This research focusses on different effects of the e-learning on ASICS employees. These effects include knowledge gain, knowledge utilization and engagement of employees as well as customer engagement. Knowledge in this case in split up into 5 different forms: declarative, conceptual, procedural, principle and problem-solving. An observation tool was developed to assess the knowledge utilization of the employees. Slight changes in behaviour before and after the e-learning, as well as between store types might suggest that the e-learning used in this research had a positive effect on the employees' knowledge utilization and engagement. Due to the small sample size, it is suggested to replicate similar research with a bigger sample, to validate whether the probable results found in this research can be assessed more thoroughly.

Introduction about the effectiveness of e-learning

This research will discuss the effectiveness of e-learning. It discusses what e-learning and several of its effective components are, as well as how these components can be assessed. To assess the effectiveness of e-learning, it is important to understand what e-learning is and what is and is not understood by its effectiveness.

What is e-learning?

E-learning, or electronic learning, is an internet based teaching system (Dictionary, 2016). References to concepts comparable to e-learning first emerged around the 1970's. The term e-learning itself started to be used around the start of the millennium. However, the development of e-learning has come a long way over the past years (Hage & Aimeur, 2010). From basic online textbooks, e-learning has developed into more interactive and personalized online learning, with multimedia playing a vital part. In some cases, e-learning is supported by a Learning Management System (LMS). An LMS is a platform which consists of different tools to enhance communication productivity and involvement (Hage & Aimeur, 2010).

The implementation of e-learning can differ significantly. The Organisation for Economic Co-operation and development (OECD) divides these differences in implementation into five categories (OECD, 2005). The lowest implementation of e-learning on education is the none or trivial online presence. The second is web supplemented e-learning, in which the internet is used as a way of communicating (through e-mail and online resources). The third implementation of e-learning is web depended e-learning, in which students use the internet in a more active way, for example for collaboration and group work. The fourth type is mixed mode, in which the online activities replace a part of the face-to-face interaction. The last type is fully online, in which there is no face-to-face interaction required (OECD, 2005). Option four (and to an extend option three) is also called blended learning and is preferred compared to the other e-learning types (Kimiloglu, Ozturan, & Kutlu, 2017).

Besides the five different implementations of e-learning, there is also another development that is taking place. Partially due to a development from online textbooks to more interactive and personalized training, e-learning has developed into a concept called e-learning 2.0 (Hage & Aimeur, 2010). E-learning 2.0 consists of learner-centred e-learning, compared to an educational setting or e-learning in which the teacher is central. This difference mainly includes that instead of a teacher delivering the content with the learner participating as the receiver of the content, the learner is now actively engaged and participates in creating the content. An example of this is a dictionary (whether online or not) compared to Wikipedia. When a learner interacts with a dictionary, he or she can only receive the content. However, on Wikipedia, the learner can actively participate in the creation of the content.

Even though e-learning is developing towards a more student-centred approach, there is still a lot of progress that can be made. For example, learners who participate in massive open online courses (MOOCS) expect that most of their time is spend on watching videos in which a professor will explain concepts to the students (Campbell, Gibbs, Najafi, & Severinski, 2014). This is based on a teacher-centred approach. Although MOOCS consist of more than just videos, it does show that the main part is not yet as centred on the learner as can be.

E-learning is used in a wide variety of places including educational and organizational settings, as well as by individuals for self-development. E-learning can be used in a wide variety of physical places, ranging between in classrooms, on the job, at home or on the road

(BrightAlley, 2017; Gudanescu, 2010; OECD, 2005). Besides the physical place where e-learning is being used, the participants are very diverse as well. E-learning participants have a big difference in background (for example culture and age differences). The reasons for using an e-learning can also differ widely. E-learning can be used to acquire new skills on the job or at school, or to rehearse earlier acquired knowledge. It can also be used to learn something purely out of interest (Wan, 2015).

Effectiveness of e-learning

There are several reasons why it is important to structure the research which is being conducted on effective e-learning, as well as to map the progress which can still be made. One of these is the increase of use and participants of e-learning. For example, when only looking at MOOCS, only one of the many MOOC platforms already has over 1.100 courses and more than 15 million students (Wan, 2015). Another reason it is important, is because a lot of money is spent on e-learning. In 2013, 56.2 billion dollars were spent on e-learning (Grünwald & Heinrichs, 2015) and it is expected that by 2022 the e-learning market will have increase to 241 billion dollars (Global Industry Analytics Inc, 2016). This is partially because the number of companies that use e-learning to educate and develop their employees, is rapidly increasing in educational as well as corporate settings (Cheng, Wang, Moormann, Olaniran & Chen, 2012; Zhang & Nunamaker, 2003). The largest growth is due to the growth in the corporate e-learning market (Kimiloglu, Ozturan & Kutlu, 2017). Kimiloglu, Ozturan and Kutlu (2017) even state that corporate training is one of the biggest and most common aspects of organizations. This is a relatively recent development, since the change in organisations towards a bigger focus on knowledge workers requires more training (Gudanescu, 2010). A third reason is the fact that e-learning can encompass a large variety of teaching systems which can differ immensely. It is important that research about the effectiveness of e-learning is conducted, to structure this wide e-learning offer based on its effectiveness. Especially since the increasing interest for e-learning is not just reflected in the increasing number of users and money spend on e-learning, but also in the increasing amount of research which has been conducted on the use and effectiveness of e-learning in educational settings and companies.

There are a lot of examples of positive effects of e-learning, such as: a change in attitude and satisfaction in the participants (e.g. Chu & Chu, 2010), an increased learning outcome (e.g. Noesgaard & Ørngreen, 2015), an increased performance (e.g. Piccoli, Ahmad, & Ives, 2001), as well as an increased motivation, commitment, and engagement in participants (e.g. Chen & Jang, 2010; Noesgaard & Ørngreen, 2015; Kimiloglu, Ozturan, & Kutlu, 2017). Effective e-learning is expected to increase participant's knowledge, influence the way learned materials are used in practice and help develop newly acquired skills. E-learning also removes physical and time barriers, increases the accessibility of new knowledge, and can more easily provide just-in-time learning (Wang, Vogel, & Ran, 2011).

Another positive effect specific for companies is a decrease in company costs when e-learning is being implemented, but also a further decrease when the effectiveness of e-learning and its implementation is enhanced (OECD, 2005; Burgess & Russell, 2003). This indicates that the effectiveness of e-learning is not just important for companies and educational setting who are planning to use e-learning, but also for companies who are currently using e-learning. Knowing what makes e-learning effective can help them in future e-learning development.

Notwithstanding the fact that it is important that research is conducted on the effectiveness of e-learning, it is also important to look at the context in which the e-learning is implemented (Wang, Vogel, & Ran, 2011). As most research is conducted in (formal)

educational settings, the results are not always transferable to an organizational setting, due to the big difference between formal educational setting and organizational settings.

When looking at the different research available, there are several indicators for effective e-learning, like (pedagogical) design and implementation (Welsh, Wanberg, Brown & Simmering, 2003). Despite these indicators however, most e-learning development focusses on the technical aspects and implementation of e-learning, instead of the pedagogical aspects (Wang, Vogel, & Ran, 2011). When e-learning is not implemented correctly, the effectiveness of e-learning can be debated (Govindasamy, 2001). For instance, a common way e-learning is distributed, is through MOOCS (Nkuyubwatsi, 2014). However, there is a lot of controversy about the retention rate of these courses, with retention rates of 12,5 percent.

To explain the lack of effectiveness, several factors must be considered which influence the effectiveness of e-learning. Kimiloglu, Ozturan and Kutlu (2017) describe seven dimensions of success. Three of which are based on the IS success model (quality of: infrastructure and system, course and information, and institution and service) and four other dimensions derived from other literature, which include: e-learning environment, learner characteristics, instructor characteristic and extrinsic motivation (Kimiloglu, Ozturan, & Kutlu, 2017). Most of these dimensions can be organized in the following three factors of influence on e-learning: technical (e.g. quality of infrastructure and system), organizational (e.g. e-learning environment, and course and information quality) and social aspects (e.g. learner characteristics and extrinsic motivation) (Alsabawy, Cater-Steel, & Soar, 2016; Kimiloglu, Ozturan, & Kutlu, 2017; Yilmaz, 2017; Keramati, Asfhari-Mofrad, & Kamrani, 2011).

Organization of learning

The way e-learning is organized can impact the effectiveness of e-learning, and is said to be the factor which influences the effectiveness of e-learning the most (Keramati, Asfhari-Mofrad, & Kamrani, 2011). However, it is difficult for school and organizations to know which e-learning is best for them, due to the huge e-learning market (Benninck, 2004). E-learning has changed the organization of learning. Where learning used to be mostly institutionalized, learning can now take place anytime and anywhere (Apricio, Baccao, & Oliveira, 2017; Gudanescu, 2010). This explains why the term e-learning is often interchanged with the term distance learning, which is an online teaching system designed to learn at an external location (for example at home). The fact that it can be used all over the world, is beneficial for global organizations who want to make sure that their employees across the globe have access to the same information (Faherty, 2003; Chen, 2008).

E-learning is also able to create a more personal learning experience and adapt to the learning curve of the participant (Batalla-Busquets & Pacheco-Bernal, 2013). Another benefit of the way learning is organized, is the fact that the training is now given consistently (there is no difference between session or trainers) and the materials discussed can be viewed and reviewed on different times (Benninck, 2004; Batalla-Busquets & Pacheco-Bernal, 2013). However, when the design of the e-learning is poorly (for example no or poor assessments, and a lack of quality content) this can be detrimental to the positive effects of e-learning (Benninck, 2004).

Social factors

Social factors are also important for the effectiveness of e-learning. Participant attributes for example, also known as personal traits, can influence the effectiveness of e-learning (Yilmaz, 2017; Apricio, Baccao, & Oliveira, 2017). An example of a participant attribute which influences the effectiveness of e-learning is grit, or the effort a participant puts into achieving his or her long-term goals (Apricio, Baccao, & Oliveira, 2017). Another

example are cultural differences, like the difference between individualistic and collectivistic cultures (Apricio, Baccao, & Oliveira, 2016), or the readiness of participants towards learning material provided through e-learning (Yilmaz, 2017). Motivation is also one of the main participant attributes which influence the effectiveness of e-learning, which includes the motivation of teachers and not just participants (Keramati, Asfhari-Mofrad, & Kamrani, 2011).

When e-learning is used correctly, this can have a positive effect on the employee and customer satisfaction (Benninck, 2004; Faherty, 2003; Gwebu & Wang, 2007; Kramer, 2007). However, it is also important that e-learning includes a way in which participants can interact with each other, avoiding a lack of social interaction (Gudanescu, 2010).

Technical aspects

When looking at the technical factors that influence the effectiveness of e-learning, it is not just the availability of a mobile device. Other factors which can plan a role are internet problems, incompatible technology, lack of technology skills or even fear of technology (Gudanescu, 2010; Benninck, 2004). Obviously, the technical readiness of the educational setting or company is important (Wang, Zhu, Chen, & Yan, 2009), but it also includes the technical efficiency of the participant (Cohen & Nycz, 2006). Technical factors do not just influence the effectiveness of the e-learning during the e-learning, but also before the e-learning is being used. Technical and organizational factors can influence the perceived ease of use and usefulness of e-learning, indicating that when the technical factors are lacking, e-learning is perceived as less useful and less functional (Lee, Hsieh, & Chen, 2013).

Other factors

Other positive effects of e-learning include the fact that it minimizes time away from work, or in other words, ‘saves’ time (Burgess & Russell, 2003). Based on the saying ‘time is money’ this also partially explains why e-learning is also more cost efficient (Burgess & Russell, 2003; Benninck, 2004), and why productivity is increased (Burgess & Russell, 2003).

Organizations are changing, and it is expected of the employees that they can adapt to these changes and acquire new types of knowledge (Wang, Vogel & Ran, 2011). For example, when a company starts to sell different products or changes their organizational structure, it is expected that the employees adapt to these changes and know about the new products. To acquire this new knowledge, the knowledge must be distributed to the employees. When e-learning is used, its effectiveness depends, among other things, on the e-readiness of a company, or in other words, how well prepared the company is to implement e-learning and distribute the knowledge successfully (Machado, 2007). Some of the factors prohibiting the success of e-learning are for example the lack of support and lack of trained staff (Gudanescu, 2010; Benninck, 2004; Faherty, 2003). Even though the relatively overall low costs of e-learning are a positive effect of e-learning, it does have high initial costs, causing smaller companies to refrain from using e-learning (Bennink, 2004).

Something else which is interesting to note, is the fact that the benefits as seen by the company, are not always the same as the way participants experience e-learning (Batalla-Busquets, & Pucheco-Bernal, 2013).

The layout of the paper will be as follows: first off, a short summary of the organisations involved in this research will be given. This will be followed by the importance of effective e-learning, after which this specific research will be further expended on and the relevant variables will be discussed in depth, including the e-learning used in this research. An outline of the design will follow, including the different instruments used as well as information about the sample. Furthermore, the results will be discussed and put into perspective and lastly several conclusions will be made.

Description of Bright Alley and ASICS

There are two external organizations involved in this research, namely Bright Alley and ASICS. Bright Alley is the organization who supplied the e-learning modules used in this research. The participants are all employees of ASICS, the organization that uses the e-learning modules assessed in this research.

Bright Alley

Bright Alley is currently part of a larger organization called Conclusion, an organization which owns several smaller companies. Originally however, it was a subdivision of the foundation of Dutch Education Abroad (Nederlands Onderwijs in het Buitenland, or NOB) (BrightAlley, 2017). Bright Alley develops online learning material for companies, to enhance professional development using knowledge sharing. This is done with a focus on educational research, e-learning design, and user experience. They have developed different products for all different kinds of organizations, including educational organizations (e.g. CITO, government organizations (e.g. the city of Rotterdam), supermarkets (e.g. C1000; Jumbo), energy companies (e.g. Eneco) and other companies, like ProRail NS and Basic Fit. These products include e-learning modules, as well as integrated learning environments, smart apps, and serious games, depending on the needs of the customer.

ASICS

ASICS is a company that has focussed on developing products for sports enthusiasts since its beginning (ASICS, 2016). ASICS started out as a company called Onitsuka Company Limited (later known as Onitsuka Tiger), named after the founder Kihachiro Onitsuka. In 1977 Onitsuka Tiger merged with GTO Sports Nets & Sportswear and in 1979 the ASICS research facility in Japan started developing and improving shoe technologies. This research facility is still in use and continues to develop shoe technologies. At the beginning of ASICS up until today, the sports shoe is the main product. However, besides shoes, ASICS also sells sporting clothes and other sporting merchandise.

The products are being sold in ASICS stores all over the world. There are two main types of ASICS stores: the full-price ('official') ASICS stores and the outlet stores (ASICS, 2016). The stores in this research are the full-price ASICS store in Amsterdam, and the outlet store in Bataviastad. Both stores are in the Netherlands. The main difference between these stores are the products which they sell and the product prizes. The ASICS store in Amsterdam only sells the newest editions of the products, whereas the Bataviastad outlet sells older editions of ASICS products with a discount.

What is effective e-learning?

For this research, an e-learning designed by Bright Alley will be assessed on its effectiveness. The e-learning was developed to help in-store ASICS employees increase in knowledge and understanding of a selection of their products. This in turn would be useful in helping customers. The effectiveness will be measured, using the following variables: learning outcome of the employees, the acquired knowledge utilization of the employees in conversations with customers and the engagement of the employees as well as the customers towards ASICS.

Learning outcome

The learning outcome is the knowledge acquired by the participants of the e-learning module. It is also one of the most commonly used measures considered in current literature on the effect of e-learning (Noesgaard & Ørngreen, 2015). Learning outcome can be divided into different types of learning (Smith & Ragan, 2005). The types of learning that will be mainly assessed in this research, are declarative, conceptual, procedural, principle and problem-solving knowledge, with Table 1 showing different examples of how these types of knowledge are assessed. For learning outcome, the declarative, conceptual and principle types of learning are most important. These types of learning are also assessed by looking at the knowledge implementation of the employees.

The assessment of the learning outcomes is based on the assessment of the learning goals. The learning goals are defined based on the taxonomy of Romiszowski (SLO, 2015). The learning goals can be divided into three categories: knowledge, understanding and application. Most of the learning goals for the e-learning fall into the first two categories: knowledge and understanding, since this is easiest to assess with the use of quizzes and e-learning. The different types of learning according to Smith and Ragan (2005) can be categorized as follows: Declarative, conceptual, and procedural knowledge are part of Romiszowski's knowledge category, principle knowledge is a part of the understanding category and problem solving is a part of the application category.

An example of a learning goal which corresponds with question 15 from the pretest is: "The employee is able to recognize that the upper shoe of the Kayano is build up with a sandwich mesh." This corresponds with declarative knowledge and the knowledge category of Romiszowski's taxonomy. The assessment of this learning goal is as follows:

15) How is the upper shoe of the Kayano build up? Circle the correct answer.

Table 1.

Overview of different types of learning which will be assessed during the research.

Type of learning	Definition	Assessment	Example
Declarative	Being able to recite or paraphrase factual knowledge (Smith & Ragan, 2005)	Pre- and posttest/ Observations	"Kayano is a shoe for people with overpronation." "The nimbus is a shoe for long runs."
Conceptual	Being able to structure knowledge in different concepts.	Pre-and posttest/ Observations	"The nimbus shoe is a shoe for people with normal pronation and who do not like cushioning. The cumulus is for people with normal pronation who do like cushioning."
Procedural	Knowing the order of certain procedures.	Observations	When a customer comes in, you welcome them first. Then ask if they run, how often, how long, on what type of ground. Before you try to sell a shoe you first make sure that the shoe fits.
Principle	Knowing the relations between two or more concepts (Smith & Ragan, 2005).	Pre- and posttest/ Observations	If a customer says (s)he is training for a marathon, then the employee should suggest shoes from the Run Long category. If a customer says (s)he has knee problems while running, then the employee knows that (s)he needs a shoe with extra support.
Problem-solving	Being able to apply the acquired knowledge in different situation, using domain specific rules.	Observations	When the employee asks a customer how often (s)he runs and on what type of ground, (s)he can recommend the correct shoe based on the offered information.

Knowledge Utilization

Knowledge utilization is used to solve problems more effectively by increasing knowledge (Backer, 1991). One of the focusses of knowledge utilization over the years has been to map the increasing importance of knowledge in all human activity (Rich., 1979). Since knowledge utilization covers a broad subject, Backer (1991) has divided this unto eight different subcategories: Technology transfer, informational dissemination and utilization, research utilization, innovation diffusion, sociology of knowledge, organisational change, policy research and interpersonal and mass communication.

Technology transfer can be divided into hard and soft technology transfer (Backer, 1991). Hard technology transfer includes literal technologies used in practice (for example artificial hearts), whereas soft technology includes training programs and counselling. However, given the huge difference between hard and soft technology, it is still debated

whether soft technology is really a part of technology transfer. *Information dissemination and utilization* is information or knowledge which is shared with a wider audience. *Research utilization* are improvements done based on research. *Innovation diffusion* focusses on the individual adoption of innovative practices (or knowledge). *Sociology of knowledge* includes the sharing of knowledge in groups. *Organisational change* is the change which needs to take place in an organisation to adopt the new knowledge. *Policy research* describes the role of knowledge in policy change (Backer, 1991).

The last subcategory of knowledge utilization is *Interpersonal and mass communication.* This entails sharing the knowledge or information to persons of interest (Backer, 1991). In this research, when knowledge utilization is mentioned, it is the *interpersonal and mass communication* subcategory which is meant. In specific the knowledge which is distributed using e-learning to in-store employees (the persons of interest) to teach them how to use this knowledge in the stores.

There are also two types of knowledge: explicit and tacit. Explicit knowledge implementation is knowledge that is being used verbally (Nonaka, 1991), whereas tacit knowledge can be used through non-verbal behaviours (Li & Gao, 2003). In this research, explicit knowledge implementation is investigated. This is because ASICS would like to know if the employees improve in helping the customer and the verbal knowledge implementation is easier to measure.

Even though it can be argued that knowledge utilization can be viewed as a learning outcome, they are assessed as two different variables. In this research learning outcome will be the knowledge acquired by the students (which will be assessed through a pre- and posttest). Knowledge utilization is the acquired knowledge which they also share with their customers. For example, when an employee knows that the Kayano is a shoe for people with overpronation, the employee will answer this correctly during the posttest. This does not mean that the employee also shares this knowledge with the customers. It is not until the employee uses this information in a customer conversation that the actual knowledge is used. This means that the same types of learning are being assessed for learning outcome as well as knowledge implementation, even though it is not the same thing which is being assessed.

Engagement

Engagement is defined as the degree to which a person connects with the environment and in some cases, participates in activities connected to this environment (South, 2006). Employee engagement is the amount in which the employee, or in this case participant of the e-learning module, is engaged in the e-learning module. In addition, this research also includes the satisfaction of the participants about the e-learning module. Participant satisfaction is a one of the most commonly used indicators of the effectiveness of an e-learning module (Sun, Tsai, Finger, Chen & Yeh, 2008). When the users are satisfied about the e-learning module, they are more likely to finish the e-learning, and gain other positive results.

Lastly, customer engagement will be assessed. The indirect effect of the e-learning module on customers is something that is not commonly used as an effect of an e-learning module. The review of Noesgaard and Ørngreen (2015) does not include customer engagement or engagement of a similar external party as an effect of the e-learning module. However, customer engagement is one of the most interesting aspects for a company. Not just because of the financial value a customer holds, but also because when a customer is truly engaged with a brand, it becomes a brand ambassador (Verhagen, Swen, Feldberg, & Merikivi, 2015; Gupta, 2012). In this research, an effect of the e-learning module on the customer engagement can only be found in customers who interacted with the employees who have completed the e-learning.

Besides the practical benefits of the proposed research, there is also a scientific value. Using the above-mentioned concepts to assess the effectiveness of the e-learning can help increase the understand of the effectiveness of e-learning. The meta-analysis of Noesgaard and Ørngreen (2015), shows that 38 out of 92 papers view learning outcome as the primary effectiveness of an e-learning. However, little research is done on the effectiveness of an e-learning module on the behaviour of the employees, as well as on the engagement of employees and customers. Only 18 out of the 92 papers used by Noesgaard & Ørngreen (2015) talk about knowledge utilization and five about engagement. This shows that little empirical research is done on the effect of e-learning on the use of the acquired knowledge, as well as on the engagement of employees and customers.

There are three main reasons why this research is relevant. The first one is practical, namely, it can support the effectiveness, or show the lack of effectiveness, of the assessed e-learning. The other reason is that in the process, an instrument is developed to assess the application of practical knowledge of an e-learning in a real-life setting. This is relevant for a scientific as well as a practical audience, since it helps assess the e-learning, but it also gives indications on how to successfully develop an assessment tool for practical knowledge of an e-learning. The last reason is that it gives an indication if e-learning can influence customers and employee engagement and in how much learning outcome and knowledge implementation are influenced.

Research questions

The three research questions are as follows:

1) What is the effect of the e-learning module on the learning outcome of employees? And is there a difference between the store types?

To measure the learning outcome, the employees will receive a pre- and posttest of knowledge questions. It is expected that the employees will significantly increase in the score of their posttest compared to the pretest. It is also expected that in both cases, the full-price store scores significantly higher compared to the outlet store, since the information provided in the e-learning is about items which are not yet available in the outlet store.

2) Does the knowledge utilization of the employees reach the benchmarks on the different observational constructs? And is there a difference between the store types?

The knowledge utilization will be measured through observations of verbal interactions between employee and customer. The outcomes will be compared to the benchmarks set by the content expert. It is expected that the knowledge of the different constructs will be more in line with the benchmarks at the end of the observations compared to the beginning.

3) What is the effect of the e-learning module on the engagement of employees and customers?

The engagement will be measured through questionnaires. It is expected that the employees will feel more engaged towards ASICS after the e-learning compared to before the e-learning. Since customer engagement is only measured at the end of the research, it is expected that the customers are positively engaged towards ASICS.

Methods

Sample

In total, 16 employees signed an informed consent and agreed to participate in the research. The participants were drawn from a pool of ASICS employees of two stores in the Netherlands: the full-price store in Amsterdam and the outlet store in Bataviastad. This was done because these two stores were the only ones that were available in the researcher's country. A full-price as well as an outlet store were included to cover both types of stores, to make sure that found results were not just because of a specific storetype. One participant was excluded from the research, due to lack of filling out the pre- and posttest. Of the 15 participants left, most participants were male (N=12). 9 out of 15 participants were employees in the full-price store and 6 participants from the outlet. One of these participants did not fill out the posttest and was an employee of the outlet store. The average age of the employees is 26 years (M= 25,87, SD=4,897), with the youngest participating employee being 19 years, and the oldest 34. The longest employed participant has worked for ASICS for 14 years, whereas the shortest worked for ASICS for 4 months (M=2,6, SD=3,538). 4 out of 15 participants worked for ASICS on a full-time basis, and 11 participants part-time. The highest finished level of education for 6 participants was university, 4 participants have finished higher vocational education (known in Dutch as hoger beroepsonderwijs, or HBO), 3 participants have finished intermediate vocational education (known in Dutch as middelbaar beroepsonderwijs, or MBO) and 2 participants have only finished their high school degree.

Materials

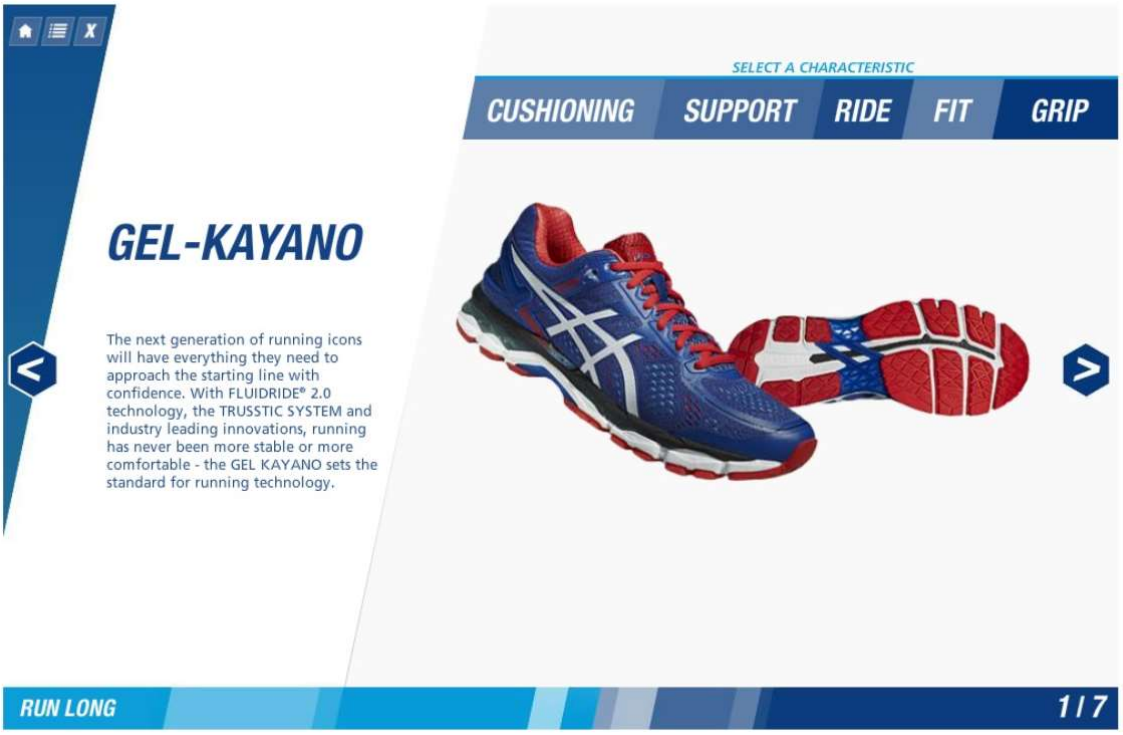
The e-learning module used in this research consists of an LMS in which the e-learning is embedded. An LMS includes software supporting aspects for learning, like planning, delivering, and managing learning events (Cheng, Safont, Basu & Goebel, 2010). The LMS used for the e-learning modules is Moodle, which is one of the most common learning management systems (Farmanesh & Samani, 2016). The e-learning platform contains three different levels: Expert, Master, and Genius. Only the first level "Expert" will be available to the sales employees at the time of the data collection and will be included in this research. When the participants log in on the LMS, they select the expert level. The Expert level consists of three sections: Knowledge, Quiz, and a final test. The knowledge category contains three e-learning modules: Your Foundation, Different Runs, and Technologies. The quiz subjects correspond with the e-learning modules and the final test includes all categories.

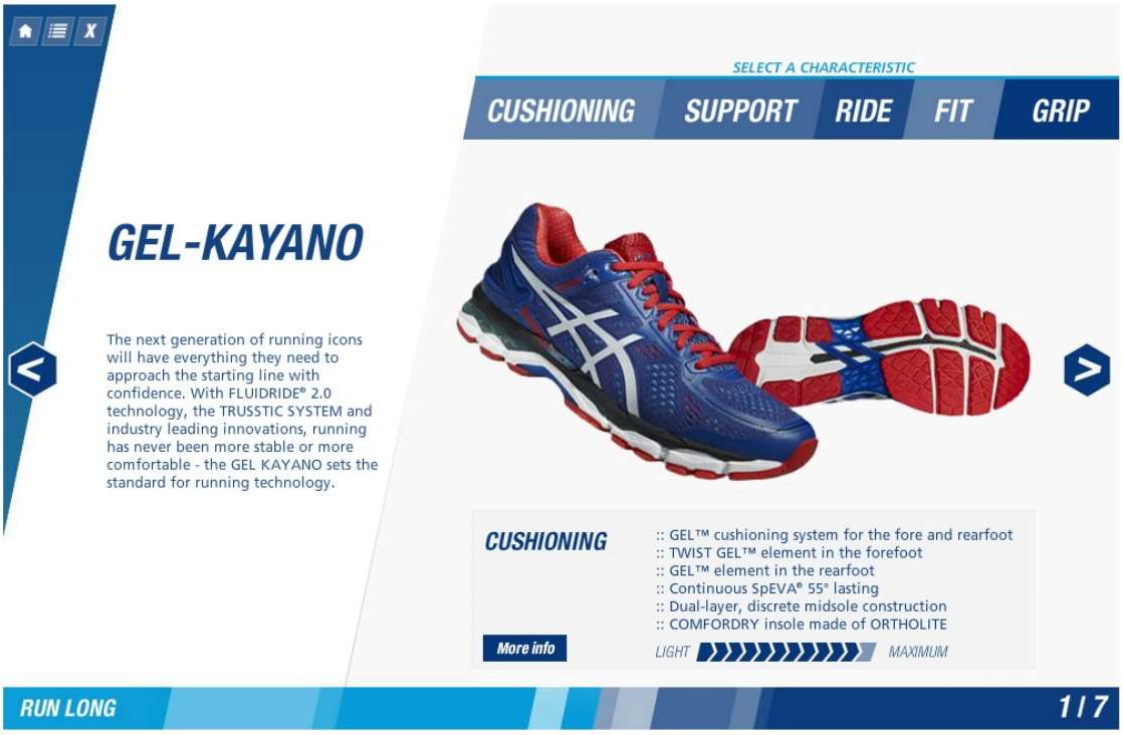
E-learning: Your foundation

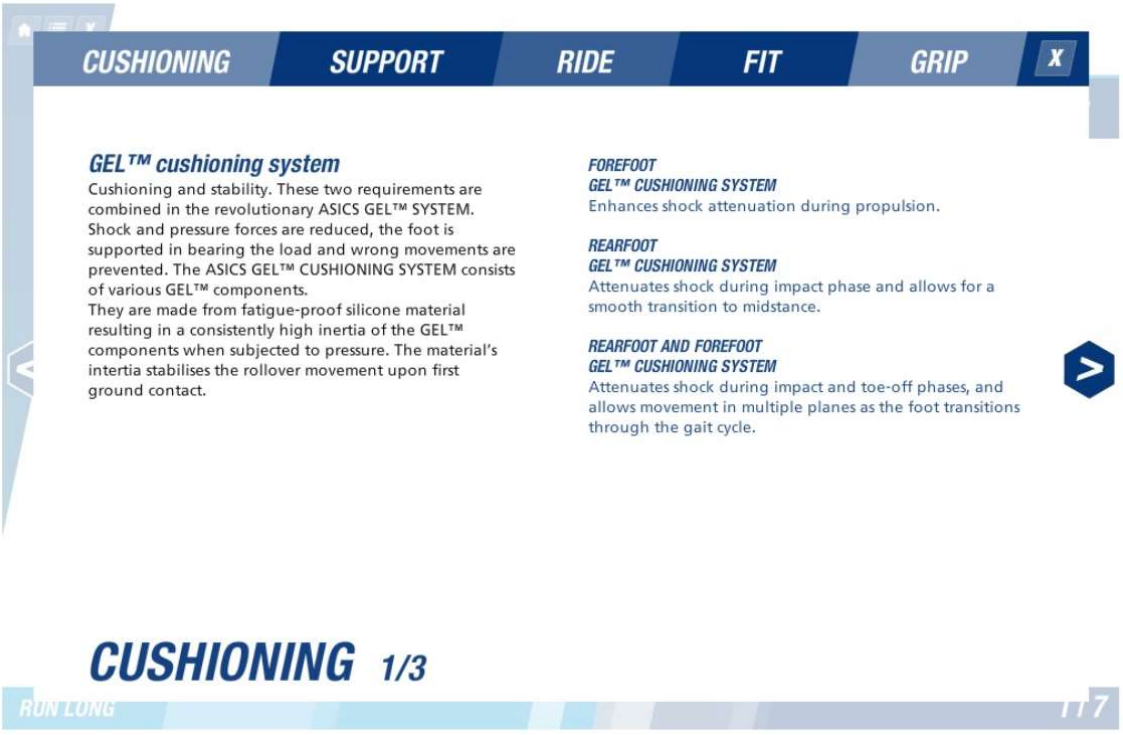
The Your Foundation module is constructed based on the four different runs used by ASICS (Personal communication, M. Block, 2016): Run Fast, Run Long, Run Tough, and Run Natural. For every run, different shoes are highlighted which best fit the specific type of run. In total this module covers 15 different shoes. When the participant starts the Your Foundation section, they see the screen in which they can select which type of run to focus on (see Figure 1a). After selecting one of the different runs, the participant gets an overview of the different shoes which are designed for the specific run. For example, when the participant chooses the Run Long section, the screen will look like Figure 1b. The following step is to select the shoe the participant wants more information about. For example, in the case of the Kayano shoe (also known as the Gel-Kayano), the participant clicks on the shoe and the following information appears (see Figure 1c). In the top right, the participant sees the five main technologies, namely cushioning, support, grip, fit and ride. When the participant selects one of these technologies, a short summary will appear under the shoe (see Figure 1d).

However, more information can be provided, by selecting the “more info”, button (see Figure 1e). This added information explains more about which parts of the shoes provide the certain technology and in what kind of way, compared to the summary, which explains which technologies are in the shoe, but not what these technologies entail.


PRODUCTS
YOUR FOUNDATION
RUNLONG
RUNNATURAL
RUNFAST
RUNTOUGH
Choose your shoe
GEL-KAYANO
GEL-NIMBUS
GT-3000
GEL-CUMULUS
GT-2000
GEL-PULSE
GT-1000


SELECT A CHARACTERISTIC
CUSHIONING
SUPPORT
RIDE
FIT
GRIP
GEL-KAYANO
The next generation of running icons will have everything they need to approach the starting line with confidence. With FLUIDRIDE® 2.0 technology, the TRUSSTIC SYSTEM and industry leading innovations, running has never been more stable or more comfortable - the GEL KAYANO sets the standard for running technology.
RUN LONG
1 / 7



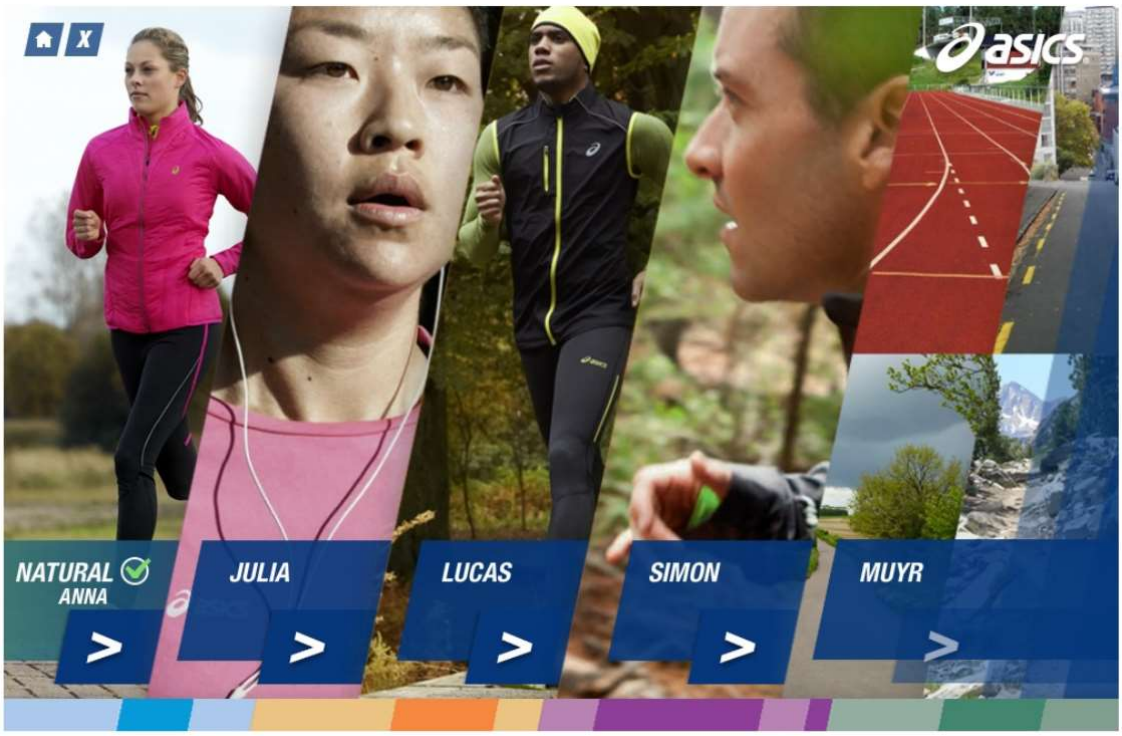


Figures 1a-e.

E-learning: Mix Up Your Run

The Mix Up Your Run module discusses the four different types of runs: Run Long, Run Tough, Run Fast, and Run Natural, more thoroughly. This is done from a customer

perspective, in which the sales employee finds out which shoes to suggest, based on the needs of the customer. The module starts with four different customers the participant can select and a general part about the concept of the different Runs, called Mix Up Your Run (MUYR) (see Figure 2a). When the participant selects a customer, they are presented with a case, in which the customer walks into the shop and provides information about his or her wishes (see figure 2b). After this, the participant is asked which type of shoe fits best with the customer's needs. Following this, the participant is asked to select certain key concepts and words, which describe this type of run. In this module, the participant also receives feedback on his or her answer (see figure 2c and 2d). The feedback appears in a dark blue box in the lower right corner and includes the correct answer and a short explanation of why the answer is correct. They sometimes also include suggestions and ideas of how to implement the acquired knowledge in practice. And the end of every case, the participants are challenged to experience the different types of runs for themselves (see Figure 2e), thus being able to better advice incoming customers, based also on their own experience.



JULIA

You are at work when Julia comes in. She walks straight to the area where all the running shoes are. You ask her what she is looking for, and she answers:

"Hi. I need new shoes. I'm training for a 10K competition in three months, but my current shoes are way too old. So basically I'm looking for new ones."

RUNNING SHOES

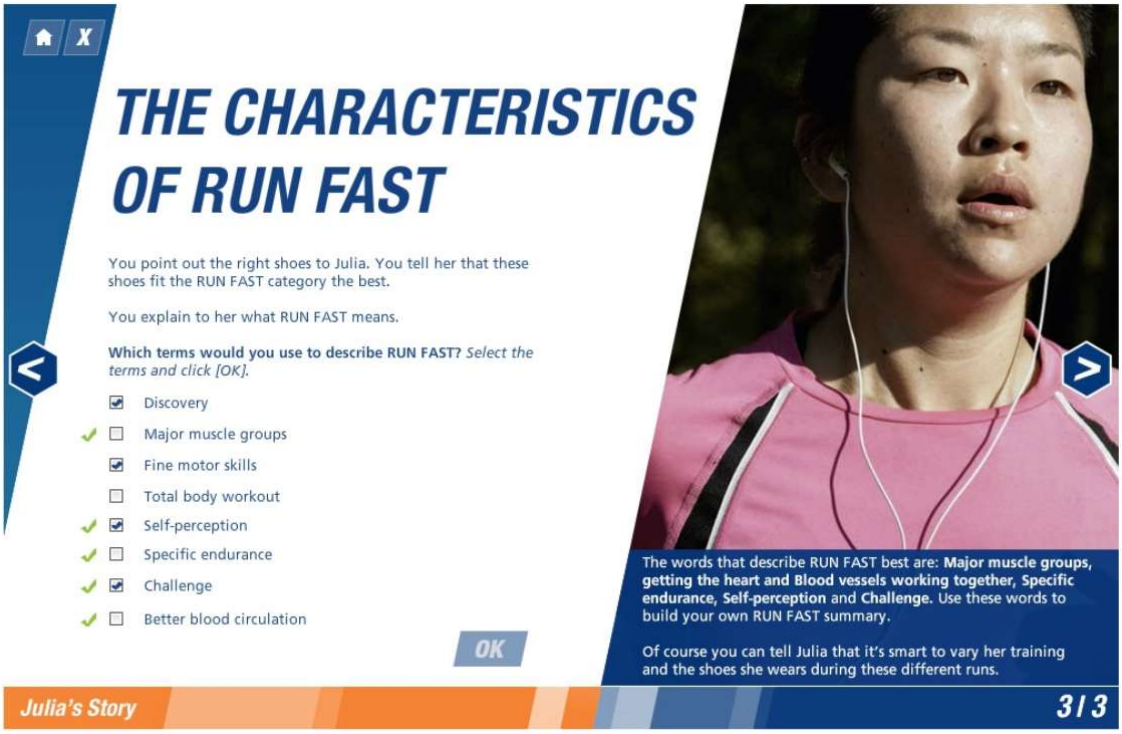
On the previous page, Julia told you that she is training for an upcoming 10K competition.

What kind of shoes will fit Julia's training run best? *Select your answer and click [OK].*

- ○ Light shoes with a loose fit and maximum cushioning and support.
- ✓ ◉ Light shoes with a tight fit and minimal cushioning and support.
- ○ Shoes with trail grip and maximum cushioning and support.

OK

Julia is training to **RUN FAST**. That means she needs light shoes with a **tight fit** and very little **cushioning** and **support**. These shoes are very dynamic and will give her an extra push.


THE CHARACTERISTICS OF RUN FAST
You point out the right shoes to Julia. You tell her that these shoes fit the RUN FAST category the best.
You explain to her what RUN FAST means.
Which terms would you use to describe RUN FAST? Select the terms and click [OK].
Discovery
Major muscle groups
Fine motor skills
Total body workout
Self-perception
Specific endurance
Challenge
Better blood circulation
OK
The words that describe RUN FAST best are: Major muscle groups, getting the heart and Blood vessels working together, Specific endurance, Self-perception and Challenge. Use these words to build your own RUN FAST summary.
Of course you can tell Julia that it's smart to vary her training and the shoes she wears during these different runs.
Julia's Story
3 | 3

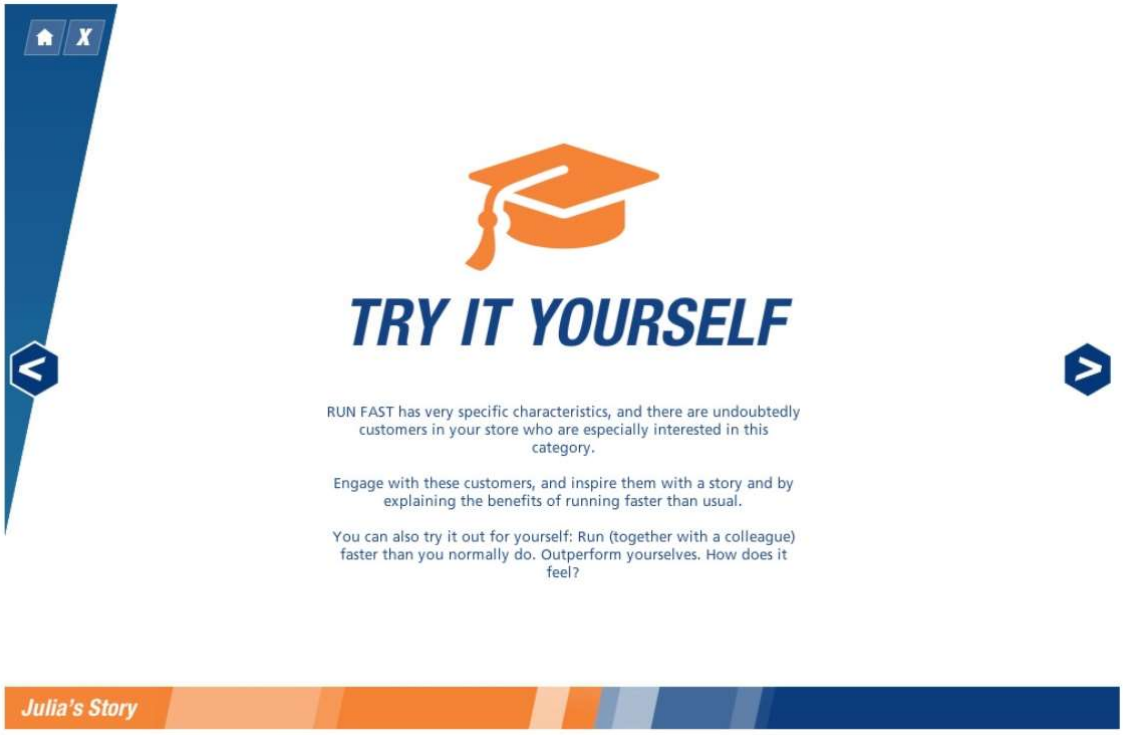
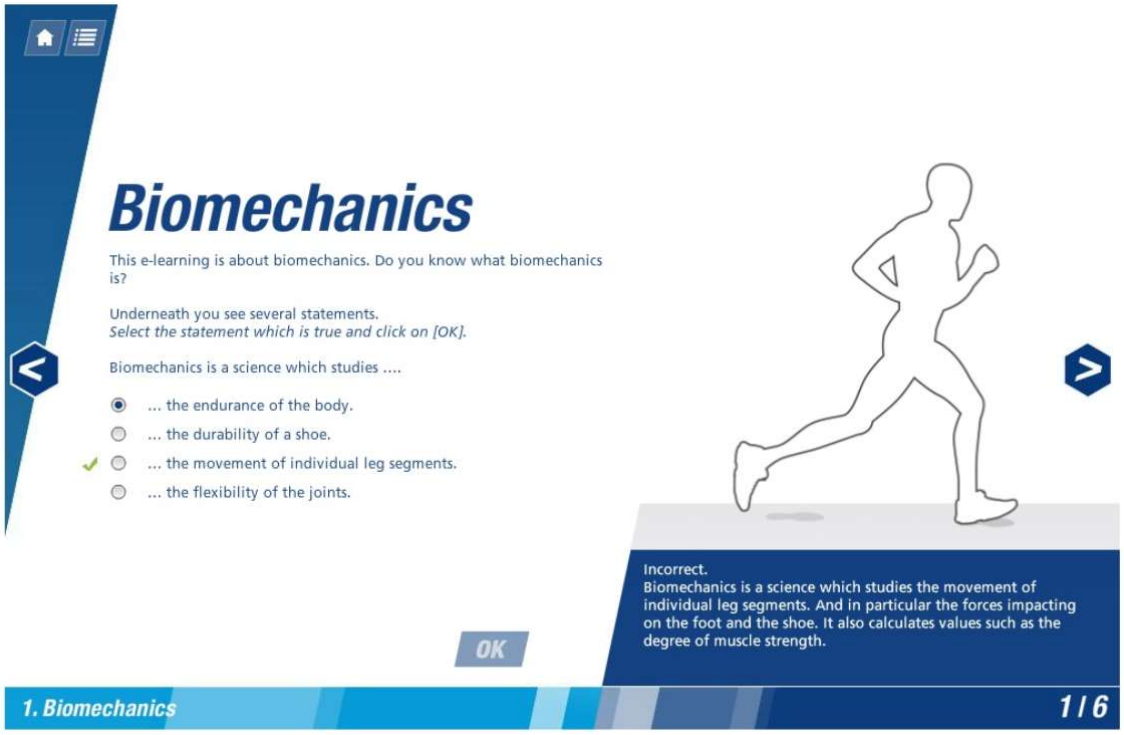

TRY IT YOURSELF
RUN FAST has very specific characteristics, and there are undoubtedly customers in your store who are especially interested in this category.
Engage with these customers, and inspire them with a story and by explaining the benefits of running faster than usual.
You can also try it out for yourself: Run (together with a colleague) faster than you normally do. Outperform yourselves. How does it feel?
Julia's Story

Figure 2a-e.

E-learning: Technologies

The Technologies module is comparable to the Your Foundation module, with the focus on the technologies instead of the shoe. When you enter the module, you can select seven different topics (see Figure 3a). The traditional technologies, like grip, fit, support, cushioning and ride, but also biomechanics (a more general approach of technologies and why they are important) and extra features, which include technologies from some of the different clothes ASICS sells. The last button lets the participant go to the dashboard, which gives an overview of all the different videos in the sub-technologies module. The five technologies include several different technologies which are used in the shoe. For example, the reason a shoe has a lot of cushioning, is because of different technologies developed by ASICS which are used in that specific shoe. For cushioning, this could be the rear- and forefoot gel cushioning systems. During this module, the participants learn more in depth about these sub-technologies and how they work. The biggest part consists of answering questions about the topic and receiving feedback in the same way as illustrated in the section on different runs (see Figure 3b). The feedback box also includes relevant information which can be used in following questions about the specific technology. The sub-technologies are also partially illustrated using explanatory videos, which discuss one or multiple related sub-technologies. The videos focus mostly on the effect of the specific technology on the foot and the body of the person who uses the shoe (see Figure 3c).



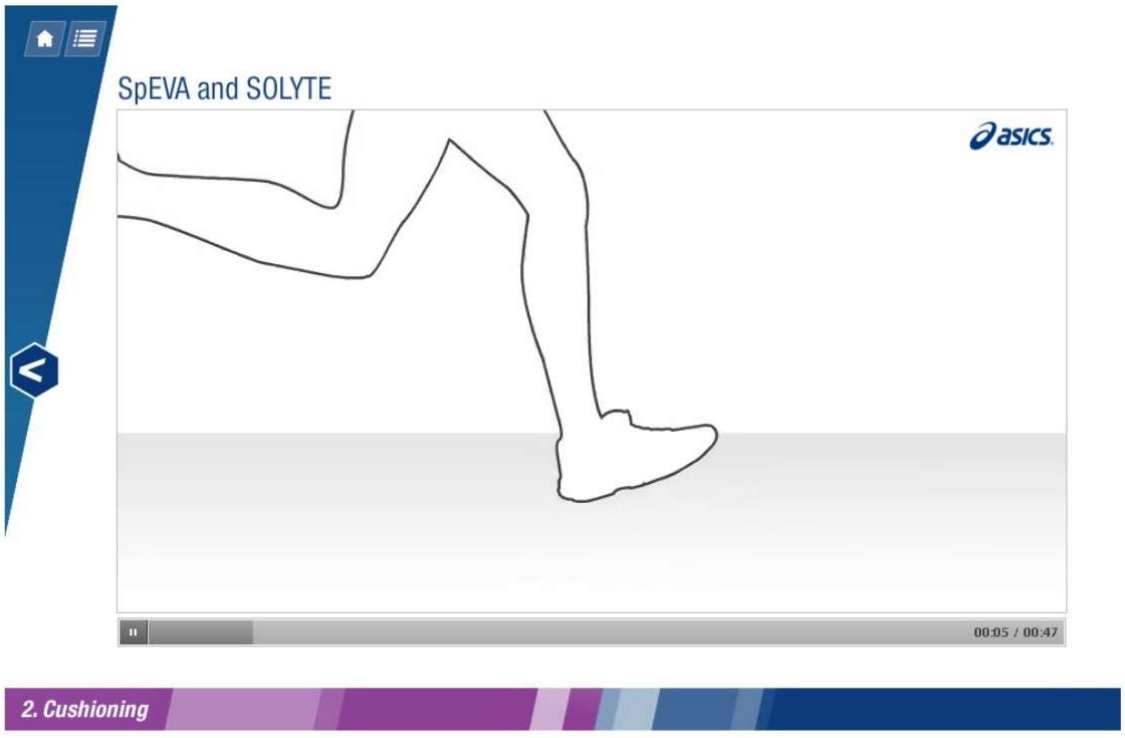


Figure 3a-c.

E-learning: quizzes

The quizzes assess the information covered in the corresponding module. This means that for every knowledge module, there is a corresponding quiz. The quiz consists of 10

questions, which are randomly drawn from a question bank of 30 questions. Since there are three quizzes (one for each module), this means that in total 30 questions need to be answered and that there is a total of 90 different items. The quizzes are time bound, with a response time of 35 seconds. There are three different types of questions: drag and drop questions, true or false questions and image questions. The drag and drop questions consist of dragging shoes or runs to the correct statement. The true of false questions are statements to which the participants need to answer whether the statement is true of false (see Figure 4a). The image questions are questions or descriptions to which the participants need to select an image (consisting of a shoe or a technology) which fits the description or answers the questions. After every answer the participants receive an immediate response which either confirms that the answer provided is correct, or with the correct answer. Both feedback responses also include a short explanation about why the answer is correct (see Figure 4a-c). Participants can retake the quizzes as often as they want. Every time they retake a quiz, a new random selection of the question bank is administered.

Figure 4a-c.

The Expert level test consists of 20 questions, which are randomly drawn from the same question banks as the ones for the quizzes. 10 of these questions are drawn from the Your Foundation, 5 from the Different Runs, and 5 from the Technologies question bank. The Expert level test looks like the other tests, since the questions are the same. This also means that the questions the participants get can have an overlap with the quizzes. When participants score 75% or higher on the Expert level test, they will receive a certificate.

After the participants have completed a subsection, a green checkmark will appear, indicating that the section is already done. However, they are still able to go back and look at it again. There is no set way for following the e-learning. With the order of the sections indicating a preferred order of first the knowledge, then the quizzes and finally the test, the participants are also able to do the final test before they even look at the knowledge or quiz sections. The participants are only allowed to take the expert level quiz a total of 3 times. This means that if the score is lower than 75% after 3 times, he or she will not receive a certificate.

Measurement instruments

Three measurement instruments will be used in this research: observations, pre- and posttests and a questionnaire.

Observation.

An observation tool was developed to assess the knowledge utilization of the participants (see Table 2). The assessment consisted of scoring the amount of times a construct was mentioned. All the verbal responses of the participants to customers during the observation were written down. Audio was not used, since the customers were not asked to participate in the research during the observations. Based on the recorded information, the researcher scored the verbal responses of the participants. A codebook was developed based on the important terms of the e-learning. Several terms were grouped together to form an abridged codebook (see Table 3). The codes in the codebook were used to score the verbal responses of the employees in a customer conversation. Appendix 1 includes the unabridged version of the observation tool. The abridged codebook consists of 9 main points of observations: total sale, total technology, amount of technology, name of the shoe, colour, and size of the shoe, advising the customer, asking questions, total runs and comparing shoes.

Table 2.

Assessment method of research question 2 (What is the effect of the e-learning module on the knowledge utilization of the employees? And is there a difference between the store types?).

Instrument	**Definition**	**Type of learning/knowledge assessed**	**Example**
Observation	Different verbal responses of the employees are scored under one of the categories.	All types of learning and object knowledge utilization.	Employee: “How often do you run?” (scored under: frequency runs) Employee: “This is the GT2000.” (scored under: shoe name)

For the analysis, the observations were grouped in three moments (pre-observation, training 1 and training 2), for which the scores are averages of the overall scores for that period.

Total sale scores the use of verbal sales techniques in participants during a customer conversation. *Total technologies* depicts the amount of times the participant mentioned one of the five technologies during a customer conversation in which *Amount of Technology* indicates how many different technologies were mentioned. The five technologies are:

cushioning, support, fit, ride, and grip. A score of 0 for Amount of Technology means none of the technologies were mentioned and a score of 5 that all technologies were mentioned. *Name* is the amount of times the participant mentions the name of a shoe. *Advice* is the amount of times the participant explicitly states he or she is advising the customer. *Colour and size* are the references to the colour or the size of the shoe. *Questions* are the amount of questions asked during a customer conversation. *Total Runs* are references to either one of the four Runs, or characteristics of these runs. *Compare* is the average amount of times the participants compares two different shoes during a customer conversation.

Following is a short example of an employee's response to a customer:

"…Well, there are three different kinds for overpronation (*total technologies- support)*. So, we have the Kayano *(name)*, what's nice about the Kayano *(name),* is that it has high cushioning *(total technologies - cushioning)*, so very soft. What's also nice is that it is made from one piece, so hardly any stitches *(total technologies - ride)*. We also have the GT-2000 *(name),* which is harder *(compare)*… since you have overpronation *(total technologies – support)* and it is for long distances *(total Runs)*, these become the options *(advice)*. Cushioning *(total technologies – cushioning)* in Kayano *(name)* is higher than in this one *(compare)*. That is exactly the same shoe, but you have options in the colour *(colour and size)*. I can just get some sizes and then you can try what is best *(colour and size)*. This is 23,5, so same size as you are wearing right now *(colour and size)* …"

In the example above, the scores would be as follows: Total sale – 0, Total technologies – 5, Amount Technologies – 3, Name – 4, Advice – 1, colour and size – 3, questions – 0, total runs – 1, compare – 1.

A selection has been made to shorten the observation measure. The concepts in this abridged version are mostly based on their importance in the e-learning. For example, total Runs cover the content of almost the entire Runs module. Table 4 gives an overview of how the different observation terms are related to the content of the e-learning module and their benchmarks. It is interesting to note that two of the observation concepts are not related to the e-learning, namely total sales and colour and size. The reason total sales is included, is because, as in-store sales employees, it is important to see how well they can use sales techniques. Besides this, one of the future modules which will be provided are about sales techniques, and the current observations will give an indication about the need for this e-learning. Colour and size is included because these aspects were mentioned quite frequently during a customer conversation, yet is in comparison to the other observation types relatively trivial. It is obviously important that the customer buys a shoe in the right size, and if convenient that they like the colour, but the focus of ASICS shoes is the right fit with the customer's running style. The benchmarks are based on the input of the content expert. According to the content expert, these would be the ideal values in the perfect customer conversation (personal communication, M. Block, 2016). This is based on the important concepts that distinguish ASICS from other similar companies and is in line with their corporate mission. The benchmarks show for example that, even though ASICS is a commercial company, they are focussed mostly on advising the best shoe for the specific customer, based on the needs of the customer (which is included in the Total Runs construct as well as the questions construct) and the different technologies which explains why a specific shoe is best for that customer (which is included in Total Technology and Amount of Technology). This is in alignment with their mission of creating the best shoes, based on the best technologies, and advising customers with the shoe which suits them best (ASICS, 2016).

Table 3.

Observation tool.

Observation construct	Definition	Type of learning assessed	Example
Total Sales	Subjective reference to product and costs of product.	Declarative.	"That shoe looks really good on you" "This one is only 180 euro's"
Total Technology	References to the different types of technology mentioned in the e-learning: cushioning (including references to demping and gel), support (including references to correction), grip, ride and fit.	Declarative, problem-solving.	"This shoe has a lot of cushioning." "This shoe has gel in the front." "GT 2000 gives more support." "The sole of this shoe provides more grip." "This shoe has a guidance line which helps direct your foot." "This shoe has a tight fit."
Amount of Technology	A number between 0-5, based on the amount of different technologies (cushioning, support, grip, ride and fit) mentioned in a customer conversation.		The employee only talks about the cushioning and support of the Kayano, creates a score of 2.
Shoe name	Mentioning the name of the shoe.	Declarative.	"This is the Kayano."
Advice	Advising the customer about which shoe fits him/her best.	Procedural, principle and problem-solving.	"I would definitely advice you to take this shoe, since it fits your foot profile."
Colour and Size	Mentioning the colour and/or size related to the shoe.	Declarative.	"We also have this one in pink." "What size do you have? 42?"
Questions	Asking questions to find the correct shoe.	Procedural, principle.	"Is the shoe big enough?" "Does your foot feel comfortable?"
Total Runs	Total amount of references about the frequency with which a customer runs, where the customer runs (or type) and the different ASICS Runs (Run Long, Run Tough, Run Fast, Run Natural).	Declarative, conceptual, procedural, principle and problem-solving.	"How often do you run?" "Do you run in the forest?" "These are run long shoes."
Compare	Comparing different shoes with each other.	Declarative, conceptual and principle.	"This shoe has more cushioning compared to this one."

Table 4.

Overview of the relation between the e-learning modules and the observation measure as well as the expected outcome and benchmarks.

Type of observation	E-learning module	Expected outcome	Benchmarks
Total Sales	Not specifically mentioned in current e-learning, but focus of next e-learning.	Increased	1+
Total Technology	Technologies and Your Foundation	Increased	5+
Amount of Technology	Technologies and Your Foundation	Increased	5
Shoe name	Your Foundation	Increased	2-3
Advice	Runs	Increased	1-2
Colour and Size	Not specifically mentioned in current e-learning.	Decreased	2
Questions	Runs	Increased	5+
Total Runs	Runs	Increased	3
Compare	Your Foundation, Technologies and Runs	Increased	1+

Pre- and posttest.

The pre- and posttest were developed to assess the learning outcome (see Table 5). The pretest was based on questions from the e-learning quizzes. The pretest consisted of 20 questions (α=.28), with a similar distribution as the Final Test in the e-learning: 9 questions from the Your Foundation quiz, 6 from the Runs quiz and 5 from the technologies quiz. The posttest consists of similar questions with slight changes (α=.43). Employees of Bright Alley develop these quizzes, in combination with a content expert of ASICS. The tests consist of three different types of questions: matching questions, in which the participant is presented different options in two columns which they match, true or false questions, in which the participant must circle if the statement is true of false, and questions in which the participant circles the picture that is described in the statement.

All the question in the pre- and posttest can be ordered under at least one of the different types of learning mentioned before. Declarative knowledge is the knowledge used most often in the pre- and posttest. 15 out of 20 questions consist completely or partially out of declarative knowledge. 8 questions include principle knowledge and 5 assess conceptual knowledge. In total, there is 1 question which includes all three types of knowledge. This was the following question, and corresponds with question 20 in the pretest (see Appendix V):

> Circle the correct answer for the following statement: The 33 M has, just like the 33 FA, an ENGINEERED MESH, with open and closed zones for better ventilation and stability.
> True
> False

The declarative part of this question is the statement that engineered mesh has open and closed zones and whether this is true or not. The conceptual part of the question is that

these open and closed zones are for better ventilation and stability. The principle part of the question is the knowledge that the 33 M and 33 FA have the same type of engineered mesh. Table 6 shows which of the different types of knowledge and the items on the pretest are connected.

Table 5.

Assessment method of research question 1 (What is the effect of the e-learning module on the learning outcome of employees? And is there a difference between the store types?).

Instrument	**Definition**	**Type of learning/knowledge assessed**	**Example**
Pre- and posttest	20 questions testing the knowledge discussed in the e-learning. Three different type of questions were used: true or false questions, connection questions with more than two options and picture questions.	Declarative, conceptual and principle learning.	Circle the correct answer for the following statement: ASICS uses four parameters to describe each running shoe: cushioning, speed, ride, and performance. True/False Which specific characteristic fits each RUN? Connect the characteristic with the correct RUN. Training all the senses Improving muscle interaction Speeding up your fat-burning metabolism RUN NATURAL/LONG/TOUGH Which shoe has the most plush ride? Circle the correct shoe. A picture of two different shoes.

Table 6.

Overview of the different types of knowledge and their corresponding pretest items.

Type of knowledge	**Items pretest**
Declarative	1-6, 10, 12-15, 17-20
Conceptual	3, 4, 6, 16, 20
Principle	2, 7-11, 18, 20

Questionnaires.

Two types of questionnaires were used to assess engagement: the employee questionnaire and the customer questionnaire (see Table 7). The employee questionnaire assessed the engagement of the employee and consisted of a 2-item scale (α=.79) and the customer questionnaire assessed the engagement of the customer, which consisted of a 4-item scale (α=.81). Both used a five-point Likert scale.

Besides engagement, several other relevant questions were included based on the e-learning, including how the participants would score their own knowledge of the Runs concept and the different technologies.

Table 7.

Assessment method of research question 3 (What is the effect of the e-learning module on the engagement of employees and customers?).

Instrument	Definition	Type of learning/knowledge assessed	Example
Employee questionnaire	For testing engagement of employees. Includes two items on a 5-point Likert scale.		How involved do you feel with ASICS?
Customer questionnaire	For testing engagement of customers. Includes four items on a 5-point Likert scale.		How likely are you to visit another ASICS store?

Procedure

Employees were informed about the research and asked to sign an informed consent, after which they were asked to fill out a short questionnaire, followed by the pretest. This in total cost about 20 minutes, with five minutes for the questionnaire and 15 minutes for the pretest. The test was distributed on pen and paper. After the pretest, the first three weeks were used as a pre-observation, during which each participant was observed during two to three customer conversations. After these weeks, the participants started the e-learning module which they made online, outside of workhours. Since it was outside of workhours, the store managers were asked to encourage the participants weekly to participate in the e-learning. The participants had a month to finish the e-learning during which the observations continued. During this period, another two to three customer conversations were observed, however not for all participants. After having finished the e-learning, the observations continued for another two weeks, during which customers were also asked to participate in the research and answer the participant survey. At the end of the observations, the engagement questionnaire and posttest were distributed to the participants. Since the questions in both are similar or the same as the ones in the pretest, the participants took about 20 minutes to fill out both forms. These were also distributed on a pen and paper basis.

The customers that were asked to participate had to meet certain requirements. They had to be older than 18 years old, and had to have had a meaningful conversation with one of the participating employees. In this case, a meaningful conversation consists of a conversation out of which at least 7 things could be scored on the observation tool. This was done since otherwise there would be no link between the e-learning and the customer engagement. Since this is more an exploratory part of the research and not the focus, the customers were only asked to participate in the last two weeks of the observations, after the participants had finished the e-learning. The customers who fit these requirements were asked to participate in a short survey about their experience in the ASICS store. The customers who were willing to participate were then asked to score the four statements of the customer questionnaire on a 5-point Likert scale.

Data analysis

Paired sample t-tests were used to analyse the learning outcome, knowledge utilization and engagement of the employees. Independent sample t-tests were used to analyse the previously mentioned variables split up by store. In the case of engagement an ANOVA was also conducted. For customer engagement only, the descriptive statistics were viewed due to the small sample size and to give an indication of a possible trend.

Results

This section includes the results found in this study. First the pre- and posttest will be discussed, followed by the results of the observations. Lastly the employee and customer engagement will be described.

Learning outcome employees

2 employees were not able to fill out the pre- or posttest (or either) and will both be excluded from the analysis (N=14). The overall average score of the employees on the pretest was 15 questions answered correctly (*M*=15,04, SD=1,95), with a maximum possible score of 20. The overall average score of the employees on the posttest was 13 (*M*=13,04, SD= 2,74).

The scores of the stores differ slightly. The full-price store has an average score on the pretest of 14 correct questions (*M*=14,17, *SD*=1,62) and on the posttest an average score of 13 correct questions (*M*=12,94, *SD*=1,98). The outlet store has an average score of almost 17 correct questions (*M*=16,60, *SD*=1,52) and an average score on the posttest of 13 correct questions (*M*=13,20, *SD*=4,07). There was a significant difference found between the full-price and outlet store during the pretest ($t(12)=2.750$, $p=0.018$), however, this was not found during the posttest ($t(12)=0.161$, $p=0.875$).

Table 8.

Total sum of scores of declarative knowledge on pre- and posttest of all participants as well as split up by store.

ASICS store		Total score Declarative knowledge pretest	Total score Declarative knowledge posttest
Outlet	Mean	12.20	10.00
	Std. Deviation	2.59	2.55
	Minimum	8.00	7.00
	Maximum	14.50	13.00
Full-price	Mean	9.33	9.67
	Std. Deviation	1.66	1.66
	Minimum	7.50	8.00
	Maximum	12.50	12.00
Total	Mean	10.36	9.79
	Std. Deviation	2.41	1.93
	Minimum	7.50	7.00
	Maximum	14.50	13.00

The results for the pre- and posttest split up into declarative, conceptual and principle knowledge are as follows. There is no significant difference between the pre- and posttest results on declarative knowledge ($t(13)=.888$, $p=.391$). The average score on the pretest was 10.36 (SD=.643), and on the posttest 9.79 (SD=.515). Since 15 items assessed declarative there was a maximum total score of 15. Only the pretest shows a significant difference between the outlet and full-price store when it comes to declarative knowledge ($t(12)=2.549$, $p=0.026$). In this case, the outlet scores significantly higher (*M*=12.20, *SD*=2.59) compared to the full-price store (*M*=9.33, *SD*=1.66). However, this significant difference cannot be found for the posttest ($t(12)=.299$, $p=.770$). The corresponding means can be seen in table 8.

The conceptual knowledge of the employees do show a significant difference between the pretest and the posttest ($t(13)=4.639$, $p<.000$). The average score on the pretest was 3.71

(*SD*=.244), and 2.00 on the posttest (SD=.234). This compared to a maximum score of 5, since only 5 items assessed conceptual knowledge (see Table 9). There was no significant difference between the two store types when looking at the pre- and posttest $t(12)=1.562$, $p=0.144$ and $t(12)=.000$, $p=1.000$) respectively). On the pretest, the outlet score had an average of 4.20 (*SD*=.84) and the full-price store an average of 3.44 (*SD*=.88). For the posttest the outlet store had an average of 2.00 (*SD*=1.22) and the full-price store as well (*SD*=.71).

Table 9.

Total sum of scores of conceptual knowledge on pre- and posttest of all participants as well as split up by store.

ASICS store		Total score Conceptual knowledge pretest	Total score Conceptual knowledge posttest
Outlet	Mean	4.20	2.00
	Std. Deviation	0.84	1.22
	Minimum	3.00	1.00
	Maximum	5.00	4.00
Full-price	Mean	3.44	2.00
	Std. Deviation	0.88	0.71
	Minimum	2.00	1.00
	Maximum	5.00	3.00
Total	Mean	3.71	2.00
	Std. Deviation	0.91	0.88
	Minimum	2.00	1.00
	Maximum	5.00	4.00

Table 10.

Total sum of scores of principle knowledge on pre- and posttest of all participants as well as split up by store.

ASICS store		Total score Principle knowledge pretest	Total score Principle knowledge posttest
Outlet	Mean	6.80	5.60
	Std. Deviation	0.45	1.47
	Minimum	6.50	3.50
	Maximum	7.50	7.00
Full-price	Mean	6.17	4.94
	Std. Deviation	1.00	0.63
	Minimum	5.00	4.00
	Maximum	7.50	6.00
Total	Mean	6.39	5.18
	Std. Deviation	0.88	1.01
	Minimum	5.00	3.50
	Maximum	7.50	7.00

The only significant difference found in knowledge increase or decrease, is for principle knowledge. Principle knowledge shows a significant difference ($t(13)=4.323$, $p=.001$). With the employees scoring on average 6.39 (SD=.235) on the pretest, and 5.18 (SD=.270) on the posttest. This with a maximum score of 7, containing all the items which assess principle knowledge. However, there is no significant difference between the scores of

the stores on the pre- and posttest ($t(12)=1.326$, $p=0.210$ and $t(12)=1.179$, $p=0.261$ respectively). With an average of 6.80 (*SD*=.45) and 5.60 (SD=1.47) on the pre- and posttest for the outlet store, and an average of 6.17 (*SD*=1.00) and 4.94 (*SD*=.63) on the pre- and posttest for the full-price store (see Table 10).

Knowledge utilization employees

In total, 6 participants are included in the average outcomes of the observation measure. 3 of both store types (full-price and outlet). The other participants did not have a minimum of 3 meaningful customer conversations, divided over at least 2 observations moments per pre-observation (PO), training 1 (T1) and training 2 (T2).

Overall knowledge utilization

Three of the observation types (total sale, shoe name and colour and size) reach the benchmarks during Training 2 (see Table 11). *Total sale* shows an increase between the pre-observation (PO) and T2 of almost one extra verbal sales technique used (.82). The average was .79 during PO and 1.61 during T2. This is in accordance with the benchmarks of 1 or more. The *shoe name* increased with 1.38 over time, starting at an average of .74 mentions per conversation to an average of 2.12 at T2, which is corresponding the benchmarks of 2-3. The average of *colour and size* increases over time with 0.42 to an average of 2.08 during T2, which is close to the benchmarks of 2.

Table 11.

An overview of the average results during the pre-observation (PO) and training 2 (T2) for the different types of observation, compare to the benchmarks as set by the content expert.

Type of observation	PO	T2	Benchmarks
Total Sales	.79	1.61	1+
Total Technology	1.83	3.23	5+
Amount of Technology	3.00	2.67	5
Shoe name	.74	2.12	2-3
Advice	.67	.34	1-2
Colour and Size	1.66	2.08	2
Questions	1.98	3.30	5+
Total Runs	.96	1.00	3+
Compare	.70	.70	1+

Total technology and questions, show a great increase between PO and T2, bringing them closer to the benchmarks than during PO. *Total technologies* increases with 1.40 between PO and T2. On average during T2 the technologies were mentioned 3.23 times, which is lower than the benchmarks of 5 or more. The average amount of *questions* also increases over time with 1.42 to an average of 3.40 mentions during T2. However, the benchmarks for questions is at least 5 questions per conversation.

Lastly, the other types of observation show either a decrease or a slight increase and do not reach their benchmarks. The *amount of technologies* however has decreased between PO and T2 to 2.67 different technologies that were mentioned on average during a customer conversation. This is lower than the benchmarks of 5. The amount of times the employees give *advice* to the customer decreases over time to an average of one out of three conversations. This is lower than the benchmarks of 1-2 times an employee should give

advice during a customer conversation. *Total runs* slightly increases between PO and T2 to a score of 1.00. This is lower than the benchmarks of 3. There is no change for *compare* between PO and T2, with an average of 0.70 at both moments. This is close to the benchmarks of 1.

Knowledge utilization split up by store

When the types of observation are split into the two different store types, several differences between the stores can be found (See Table 12). Total sales, colour and size, total runs, total technologies and compare all show a bigger increase for the outlet stores. The *total sales* for the outlet stores, showed an average of 2 verbal sales techniques compared to the full-price which showed an average of 1 (*M*=2.14 and 1.08 respectively). The increase for *colour and size* is most visible in the outlet store, where the average increases from 1.51 to 2.43, compared to the full price store, where the average slightly decreases with an average of 1.80 during the PO and 1.70 during T2.

Total runs showed an increase for the outlet store with an average of 1.24 during PO and 1.71 during T2, but decreases in the full-price store, with an average of 0.63 during PO and 0.29 during T2. The *compare* score of the full-price store decreases over time (with *M*=.78 during PO and *M*=.66 during T2), whereas the compare score of the outlet store increases (with *M*=.55 during PO and *M*=.74 during T2). The score of *total technologies* during PO is already higher at the full-price store than at the outlet. During T2 the full-price store still scores higher on average, however, the gap between the two has decreased.

The full-price store shows a bigger increase for the *shoe name*, which starts with an average of less than 1 (*M*=0.70) and have an average of about 2.5 times during T2 (*M*=2.51). This compared to the outlet store, which starts out with an average of less than 1 (*M*=0.82) and only has an average of about 1.5 during T2 (*M*=1.54).

Table 12.

The means are represented, split up per construct and per observation moment (PO and T2). The table shows the scores split up between the two store types.

		Full-price	Outlet
Total Sale	PO	0.78	0.80
	T2	1.08	2.14
Total Technologies	PO	2.10	1.56
	T2	3.26	3.19
Amount Technologies	PO	3.33	2.67
	T2	3.00	2.33
Name	PO	0.70	0.82
	T2	2.51	1.54
Advice	PO	0.73	0.55
	T2	0.42	0.23
Colour and size	PO	1.80	1.51
	T2	1.70	2.43
Questions	PO	2.08	1.84
	T2	3.30	3.47
Total runs	PO	0.63	1.24
	T2	0.29	1.71
Compare	PO	0.78	0.55
	T2	0.66	0.74

Amount of technologies as well as questions shows different developments for both stores. The *amount of technologies* was during PO for the full-price store a more than 3, and below 3 for the outlet. This increased for both stores to 3.67 during T1. However, after an increase during T1, this declined to on average less than 3 different technologies during T2, and for both stores lower than their original scores at PO. The average amount of *questions* increases between PO and T2 for the full-price store as well as the outlet.

Engagement of employees and customers

Employee engagement.

The average score given to ASICS as a company by its employees during the pretest was an average score of 3.71 and 3.43 during the posttest. A paired samples t-test was carried out and no significant difference was found ($t(13)=1.472$, $p=0.165$). Similar results were found for the average self-reported score on engagement, with an average of 3.64 during the pretest and an average of 3.79 during the posttest (see table 13). These results were also not statistically significant ($t(13)=-0.618$, $p=0.547$).

The full-price store has the biggest variance in the scores given to ASICS. During the pretest the average score given was 3.33 and during the posttest this changed to an average score of 2.89 (see table 13). The average score of engagement is more similar, with an average score during the pretest of 3.44 to an average score of 3.56 during the posttest. A paired-sample t-test was performed in both cases, but neither was statistically significantly different ($t(8)=-1.835$, $p=0.104$, for the grade given to ASICS, and $t(8)=-0.426$, $p=0.681$, for the employee engagement.)

Table 13.

Scores on engagement and grade given to ASICS

ASICS store		ASICS grade (pretest)	Engagement (pretest)	ASICS grade (posttest)	Engagement (posttest)
Outlet	Mean	4.40	4.00	4.40	4.20
	N	5	5	5	5
	Std. Deviation	0.89	1.23	0.55	0.84
	Minimum	3	2	4	3
	Maximum	5	5	5	5
Full-price	Mean	3.33	3.44	2.89	3.56
	N	9	9	9	9
	Std. Deviation	1.00	0.73	0.93	0.53
	Minimum	1	2	1	3
	Maximum	4	4	4	4
Total	Mean	3.71	3.64	3.43	3.79
	N	14	14	14	14
	Std. Deviation	1.07	0.93	1.09	0.70
	Minimum	1	2	1	3
	Maximum	5	5	5	5

For the outlet store, there is little difference in engagement. During the pretest the average score given to ASICS as a company was a 4.40 and during the posttest the same average (see table 13). The average of engagement towards ASICS has slightly increased, with an average of 4.00 during the pretest and an average of 4.20 during the posttest. However, these results are not statistically significant ($t(4)=0.000$, $p=1.000$ for the grade given to ASICS, and $t(4)=-0.408$, $p=0.704$ for the engagement).

Due to the difference in scores between groups, a one-way ANOVA was also conducted to discover possible differences between the stores. There was a significant difference found for the grade given to ASICS during the posttest ($F(1,12)=10.889$, $p = .006$) between the outlet and the full-price store, with the outlet store giving ASICS a significantly higher grade than the full-price store.

Customer Engagement.

6 customers were interviewed about their experience with ASICS. These customers were all male (N=6) and interviewed in the outlet store. Given the small sample size, only the average scores will be given. The questions were scored on a 5-point Likert scale, with 1 being the lowest possible score and 5 the highest. The lowest score given by customers to all the statements was a 4 and the highest 5 (see Table 14). It is interesting to look at the questions separately, since they assess different aspects (for example ASICS as a brand and the customer's experience of the employee) and gives an indication on which aspects might be interesting for ASICS to investigate further.

ASICS as a brand had the highest average score, with a 4.83 (SD=0.408), followed by the employees' knowledge and their likeliness to return to an ASICS store, which both were scored with an average of 4.67 (SD=0.516). The lowest score was how satisfied they were about how they were helped, which still had a score of 4.50 (SD=0.548). These scores show an above average satisfaction about ASICS.

Table 14.

The minimum and maximum score, as well as the average and standard deviation of the customer engagement questionnaire, scored on a 5-point Likert scale.

	How satisfied are you about how you were helped?	How well did you think the employee knew what (s)he was talking about?	What grade would you give ASICS as a brand?	How likely are you to return to an ASICS store?
N	6	6	6	6
Minimum	4	4	4	4
Maximum	5	5	5	5
Mean	4.50	4.67	4.83	4.67
Std. Deviation	0.55	0.52	0.41	0.52

Discussion and conclusion

This research was conducted to see how to set up an effective measure to assess the effects of e-learning on the learning outcome, knowledge utilization and engagement of the employees, as well as the engagement of the customers. To get a better understanding of the effects, five different types of learning were reviewed: declarative, conceptual, procedural, principle, and problem-solving knowledge (Smith & Ragan, 2005). The research also assessed knowledge utilization.

First the results will be discussed, which will then be followed by a review of the different types of knowledge. Lastly, suggestions for Bright Alley will be discussed, as well as the limitations of this research and suggestions for further research.

Learning outcome

Even though the results on the posttest were lower compared to the pretest, no significant difference was found for the total of participants. There was a significant result found between the scores of the full-price and outlet store on the pretest, with the outlet store scoring significantly higher than the full-price store. This difference was not found for the posttest. Both stores scored on average lower on the posttest compared to the pretest. It is important to remember that even though a significant result was found, further research needs to be conducted due to the sample size. Besides this, it was also expected that current ASICS employees already had some level of knowledge about the technologies, preventing differences to be significant, whereas the e-learning was designed as a form of training for new employees.

The different types of learning were also assessed and show that there is a difference in the easiness of assessing these types of learning. Most researches focus solely on if there is an increase in knowledge, and only few look at effects beyond knowledge gain (Noesgaard & Ørgreen, 2015), or take a closer look at the different types of knowledge. Therefore, it is interesting to note that there is a difference in the easiness of assessing the different types of learning. Specifying the different types of knowledge, and looking at different effects gives a deeper understanding about the effects of e-learning.

When relating the results of the observation to the different types of learning, the employees' declarative knowledge was the easiest to assess. This is in accordance with Smith and Ragan (2005) who state that this is also the most basic type of learning outcome and easiest to assess. However, when it comes to the learning outcome, there was no significant increase when it comes to declarative knowledge. There was however, a significant difference during the pretest between the outlet and the full-price store, in which the outlet store scored significantly higher. This difference was gone during the posttest. Since declarative knowledge is the ability of employees to recite factual knowledge (Smith & Ragan, 2005), and the participants already scored relatively well on the pretest, it could also mean that the employees already had the factual knowledge present, and the e-learning did not help them significantly improve. This is especially plausible since there was an increase for declarative knowledge found in knowledge utilization, indicating that there must have been some declarative knowledge available to be able to offer it to the customers.

Just like declarative knowledge, there was no significant difference for conceptual knowledge, indicating that the employees did not improve in their ability to structure the knowledge provided in different concepts (Smith & Ragan, 2005). Principle knowledge even showed a significant decrease between the pre- and posttest. This means that at the end of the research, the employees were less skilled in applying the acquired knowledge in different situations than before (Smith & Ragan, 2005). It is however important to keep in mind that

conceptual and especially principle knowledge are more difficult to assess compared to declarative knowledge.

Knowledge utilization

The results of the observations have several interesting outcomes. There are three terms which have shown the biggest increase over time during the observations, namely Total Technologies, Name, and Questions. These results imply that during a customer conversation, the technologies and shoe name are more frequently mentioned, and that the employee asks more questions to find the right shoe for the customer. When we look at the different e-learning modules, the effects are divers. The total technologies and name are most prominent in the Your Foundation e-learning, which focusses most on connecting the appearance and name of the shoe with the different technologies in the shoe. Since these are the ones with the biggest increase, this implies that the Your Foundation module was most effectively designed.

The Technologies module has a two-sided effect. This can mostly be seen in the decrease in amount of technologies and the lack of increase in comparing the shoes. Even though the use of the technologies has almost doubled (total technologies), the amount of different technologies has slightly decreased. This could imply that the employees increased their knowledge about the technologies they already knew and applied these during conversations with customers and that the amount of technologies stayed the same because they were already familiar with them. However, with an average of 3 out of 5 technologies and a slight decrease compared to the beginning of the e-learning, there is still room for improvement. Especially since all five technologies are prominent in every type of ASICS shoe. An important side note, is the fact that not every customer has the need to hear about all five technologies. This could imply that the employees responded to the needs of the customer and based on those needs provided the types of technologies they were interested in. However, since the customers were not asked about their interest in technologies, this hypothesis can only be validated after further research.

The Runs module focusses more on asking questions to find out which shoe best fits the customer with a specific line of questioning. Even though asking questions has also increased over time, the specific line of questioning as used in the Runs module has not yet made its way to the customers, since the total runs references does not increase accordingly. This could explain why advice has not increased (however, it does not explain why it has decreased), since an advice is usually given after a specific line of questioning. For example, it is more logical to give advice when the employee has background knowledge about the customer's type of running (how long, what underground, if he/she is training for a specific run etc.), than if the employee asks more questions on how the shoe feels, if he/she can be of help and what the customer is looking for. It is also interesting to note that when taking the employee questionnaire into account, the knowledge about the runs is scored lower at the posttest than at the pretest for the full-price store. This could indicate that, due to the newness of the concepts, they realized that it was harder to do in practice, which might have influenced their self-assessment.

There are also two types of observation which are not specifically mentioned in the assessed e-learning modules. The total sale has increased, implying that when employees increase in knowledge, they also increase in using sales techniques. The references to the colour and size of the shoe remains almost the same, with a slight increase over time. This could mean that the employees are less efficient then they should be when it comes to shoe size, since they should be able to find the right size in one or two tries. However, it could also mean that, despite the technologies in the shoes, the colour remains an important factor for most customers. It is important to note that given the size of the participant group, these

results are all plausible implications and no straightforward conclusions can be made on these results alone.

When looking at knowledge utilization, several types of knowledge changed during the observations. However, in this research the focus was on explicit interpersonal and mass knowledge utilization (Nonaka, 1991; Backer, 1991). This means that there is still a big part of knowledge utilization, for example the implicit knowledge utilization (Nonaka, 1991) as well as the 7 other approaches of knowledge utilization mentioned by Backer (1991) which are not considered. It is also important to consider the way the knowledge which is to be used ends up with the right people. This is seen in the two different approaches of how this can happen, namely the *engineering model* and the *socio-organisational model* (Landry, Lamari, & Amara, 2003). The engineering model assumes that knowledge is only used when it is thoroughly researched, which in turn changes policy (Crona & Parker, 2011). The socio-organisational model however focusses more on the social relation between researchers and policy makers and offer three ways in which these relations can be influenced: Organisational-interests (meaning that scientific research increases when the needs of end users are taken into account), two-communities (includes cultural differences between researchers, policy makers and end users), and social interaction (the influence of the interaction between researcher and policy maker on the knowledge utilization). In this research, the aspects of the socio-organisational model are not researched. This could however explain some of the data outcome.

Change in knowledge types in knowledge utilization

An increase in declarative knowledge can be seen since the types of observations which have increased most are the ones in which declarative knowledge is observed (for example total sale, colour and size, total technologies, and name). It is also the type of learning which in general is used most in this research.

Conceptual knowledge has not changed, since the total runs and compare terms are the ones which remained the same. This is comparable with the results found in the learning outcome. These results indicate that, since there was no increase in acquired knowledge, there was also no possibility to implement this in practice through knowledge utilization, meaning that the knowledge the employees masters is already being optimally shared with customers.

Principle knowledge does show some increases in constructs like questions, however, a decrease is seen when it comes to giving advice. Since principle knowledge is also the only one which decreases over time in learning outcome, this could explain why the construct advice shows a decrease as well. When the employees are less sure about the relation between the different types of information (Smith & Ragan, 2005), they feel less confident to give an advice to customers. This can also be seen in the implied effects of the Runs module, where it seems that part of the procedure is there (asking questions to find out specific things about the customer), yet does not reach its full potential by having the employee finalize it in the form of an advice.

Procedural knowledge has increased in the specific context of questions; however, a slight decrease can also be seen in the advice section. This could suggest that there are still certain aspects missing. It implies that the knowledge of the last step of this process (namely giving an advice) is not put to practice. This could mean that the step of giving advice is not yet learned.

Lastly, problem-solving knowledge shows in certain observation terms an increase (e.g. total technologies), yet in some a decrease as well (e.g. advice). This could mean that certain aspects are more difficult for the employees to apply, like giving advice.

Employee and customer engagement

The employee engagement shows a small indication of increase after the e-learning and a small decrease when it comes to grading ASICS as an employee.

This is however most interesting in the context of the full-price store, since the average grade given to ASICS decreases between the pre- and posttest. Even though there is no significant difference found between the grade given to ASICS during the pretest between the stores, this is found during the posttest, with the full-price store grading ASICS significantly lower that the outlet store. This decrease in scoring could be explained by several variables not related to the e-learning. As mentioned by South (2006), engagement is the relation between the person and the environment, including activities connected to the environment. In this case ASICS can be viewed as the environment, and the e-learning as one of the activities connected to the environment. This means that the activity can influence how the person experiences the environment, but the environment can also affect how the person experiences the activity. During the time of the research, some unexpected organizational changes were taking place which may have affected the view of the employees towards ASICS. Since the feel of engagement can be impacted by several different factors, it is difficult to say if the measured change was due to the e-learning or because of other organisational factors. Interestingly though, this seemingly slight dissatisfaction with ASICS in general, did not impact their overall engagement towards ASICS, since that score increased slightly. These increases give an indication that with bigger sample sizes significant effects might be found.

Given the small sample size of customers, no conclusions can be made. Based on the collected data however, it does give an indication that customers are in general very satisfied with ASCIS as a brand and score the knowledge of the employees as high, more so than the employees themselves. Based on these results however, you can suggest that ASICS is very good at making its customers feel engaged, which, as a result, might lead to customers who behave as ambassadors (Verhagen et al., 2015). However, more extensive research with a bigger focus on the customers should be conducted to validate this claim. It is difficult to find a connection between the e-learning made by the employee and the engagement of the customer, because there are more variables in play which influence the customer's engagement. Besides this there were little effects found of the e-learning on the employee, which makes it even harder to find a connection to this e-learning through assessing the employee-customer interaction. The ideal conditions to research if there is a possible connection, would be to ask customers about their experience not just after, but also before the employees participate in the e-learning, and a significant positive effect of the e-learning on the employees.

Effective e-learning

The effects of e-learning can be divided into three different main categories: organisation of learning, social factors, and technological aspects. The results of this research influence each of these three factors. When looking at the organisation of learning, one of the benefits of e-learning is the fact that the learning process can be adapted to the individual (adaptation) (Batalla-Busquets & Pacheco-Bernal, 2013). However, this was at the time not the case in the e-learning developed for ASICS. All the in-store employees were expected to participate in the e-learning, even though it was designed as a replacement of the onboarding program and most employees were already working at ASICS for a while. Besides this, the materials provided were the same for the outlet and full-price store, even though most of the content was currently not applicable for the outlet store. Another aspect which shows that adaptation was not fully implemented, can be seen in the feedback system. After answering

questions in the e-learning, the participants received feedback on their respective answers. However, to prevent a difference in knowledge due to the different feedback provided, the feedback was very similar with the only difference being that when the participants answered a question incorrectly, the correct answers were shown. Before the e-learning, the onboarding of in-store employees was not regulated, and consisted mostly of readers and face-to-face interactions. The e-learning however, provides a universal onboarding training and is fully online, which corresponds with the fifth category of the OECD (2005). Kimiloglu, Ozturan & Kutlu (2017) state that the most effective way to use e-learning is a combination of online and offline learning. A way ASICS could implement this, would be to also have the employees practice the learned materials amongst each other in the store, for example during times when there are no customers present.

Some of the social factors discussed in this research are the effects of participant attributes, cultures, e-learning readiness, and motivation (Apricio, Baccao, & Oliveira, 2016; Apricio, Baccao, & Oliveira, 2017; Yilmaz, 2017; Keramati, Asfhari-Mofrad, & Kamrani, 2011). When looking at culture differences, there was not a huge difference, since both participating stores were in the Netherlands. Since the Netherlands is a more individualistic culture and ASICS has stores in multiple countries, this might imply that the results cannot be generalized to other stores in for example more collectivistic cultures (Apricio, Baccao, & Oliveira, 2016). However, there was a difference between the types of stores (outlet and full-price) which influences the store-culture. This can be seen in the fact that there are differences between the two stores. A suggestion for further research might be to look at the differences in e-learning between full-price and outlet stores, in individualistic as well as collectivistic cultures. The e-learning readiness also has an impact on the effectiveness of e-learning. Even though most of the employees were positive toward the e-learning, not all of them finished the e-learning completely, which in some cases was not unwillingness, but inability of working the system (which is a technological factor). Another problem was the motivation of the employees. Since the e-learning contained information which most employees already expected they had, this might have influences the motivation of the employees. The engagement of the employees however indicates a, not significant, but trend towards an increase in engagement after the e-learning. Other factors which are not assessed in this research, but which could have influenced the effectiveness of the e-learning are the participant attributes like grit (Apricio, Baccao, & Oliveira, 2017) and the social interaction facilitated by the e-learning. Since the e-learning is offered in an LMS, there are several possibilities to facilitate social interaction. However, during this research these tools were not used and might be interesting to research in the future.

Some of the technical and other factors which influence the effectiveness of e-learning are the technical expertise of employees, which, as mentioned before, was in some cases a bit of a challenge (Gudanescu, 2010; Benninck, 2004). The e-learning was made interface-friendly for laptops as well as phones. However, this was not mentioned to the employees and ASICS did not offer the technology in their stores for employees to practice. It was expected that, since the website had an interface designed for phones as well, that employees could finish the e-learning everywhere, including at the bus stop, at home etc. (Personal Communication, M. Block, 2016). The e-learning does facilitate the change in organisation. Since the development, design and technologies in the shoes change constantly, it is an easy method to update the e-learning and ask the employees to review the changes. In the case of the outlet stores it is also possible to provide them with the information about the shoes in their store at the right time, even though this differs from the full-price store. One of the

changes in e-learning is also the development from a more teacher-centered approach to a more student-centered approach (e-learning 2.0, Hage & Aimeur, 2010). There are several suggestions which can make the following e-learning modules more student-centered. For example, for the development of this e-learning module, the store managers were asked to contribute. However, since the e-learning is developed for the in-store employees, it might be better to also involve several of them. Besides this, the e-learning is mostly on a click-through basis, and even though there are questions, there is no room for own content making (Hage & Aimeur, 2010).

Suggestions Bright Alley

The main suggestion for Bright Alley to improve their e-learning, is not just to look at what needs to be learned, but also to assess in which knowledge category the different knowledge constructs fall. When doing this properly, this could result in several changes.

First off, it could indicate a difference in the layout of the e-learning when looking at the relation between the knowledge and assessment (quizzes) parts. Due to the layout of the e-learning, most of the knowledge was constructed and assessed in a way that would work well for declarative knowledge. However, as mentioned in Smith and Ragan (2005), declarative knowledge has received a lot of negative feedback and is a more basic type of knowledge. The other types of knowledge, like procedural and problem-solving, are more of an intellectual order. This might mean that the method of assessing this type of knowledge should be different. For example, the only assessment for this e-learning was the use of quizzes and a final test, mostly consisting of true-false questions and all conducted online. However, to assess whether someone learned a procedural construct, it might be better to assess this through a role-play, which is more closely related to a situation in which the participants would use this type of knowledge, but cannot be assessed through the e-learning itself.

One of the biggest indications that it might be useful to think of different assessment measures, is the fact that the runs method was constructed in a way which was most like procedural and problem-solving learning. However, the assessment of this e-learning was more related to assessing declarative learning outcomes. Even though during the e-learning the participant was taught about the different runs in a procedural fashion, the quizzes and final test were not designed in this fashion. When looking at the results of the observation, the runs type of observation showed little improvement. This could indicate that this was due to a discrepancy between the way the knowledge was presented, and the assessment used for this type of learning. This shows that either the way the knowledge was presented, or the assessment of the knowledge was not in agreement with the expected outcome. As addition to this statement, one of the e-learning modules was mostly developed as a reference for the employees which they could refer to during their working hours when customers had questions. However, during the observations none of the employees used it in this way.

Another suggestion is based on the statement of Piskurich (2003) that one of the aspects of designing e-learning, is assessing, and analysing the needs of the participants. This is in line with the two-communities' aspect in knowledge utilization, namely that there might be a difference in culture between the different groups (Crona & Parker, 2011). The current e-learning was developed based on the needs of the manager of the in-store employees and the e-learning was only tested by managers instead of the in-store employees, which mostly focussed on assessing the user friendliness of the e-learning. It would have been better if several in-store employees were involved earlier on, to help prevent any possible misconceptions which might exist within the supervisor about the capacity and knowledge of the employees. For example, the employee might have been able to voice his or her concerns

about an e-learning module designed for in-store use, stating that there are currently no digital devices available to do this on, or explaining that it might be difficult to implement since it is very different from what they are used to.

There are also several lists of strategies to implement knowledge utilization effectively. Backer (1986) for example suggests the following six points as important factors which can influence the effectiveness of knowledge use: interpersonal contact, planning and conceptual foresight, outside consultation of the change process, user-oriented transformation of information, individual and organisational championship, and potential user involvement. As mentioned before, user involvement was tried by using store managers, however the end users (the store employees) were not involved in the process. Bright Alley does plan the development of the e-learning, however if the development of the e-learning is not done in combination with an objective assessment of the e-readiness of the organisation for whom the e-learning is developed, this can be detrimental for the knowledge utilization. Gudanescu (2010) comes with four suggestions, which include the importance of human interaction, the relevance and timeliness of the content, providing feedback and support and providing opportunities for active engagement. Bright Alley has implemented some of them very well, like providing feedback and support as well as relevance of the content. Nonetheless, there is no human interaction as part of the e-learning and since most of the exercises consist of drill questions, there is more growth possible for opportunities for active engagement.

A fourth and final suggestion would be to add a vocabulary list with definitions of some of the more difficult words. Even though the e-learning was translated into several languages, it was not translated to the Dutch language. This means that the participants of this research had to participate in an e-learning which was not in their native language. Even though most of the focus words (like the different technologies) were words they were familiar with, there were also several words used in the e-learning itself which were not always understood by the participants. Hence it might be beneficial for the learning gain of the participants to add a vocabulary list.

Conclusion

One of the biggest contributions of this research is the development of an observation tool to measure different types of knowledge, through assessing the effect of e-learning in different aspects, like knowledge gain, knowledge utilization, employee engagement as well as customer engagement. Helping companies realize that there are different types of knowledge, helps them determine even better what the specific needs are, and can help improve the design, implementation, and effect of the e-learning.

The main reason for the lack of more significant results is the size of the sample. Due to geographical and time difficulties, it was not possible to collect more data. Another reason could be that most of the participating employees already knew most of the information provided in the e-learning, or did not need it. For example, the employees from the outlet store received information in the e-learning which was applicable on shoes they have not had the chance to sell yet. This way it is less applicable to them, and they might also approach the e-learning with a less motivated attitude. The way to improve this would be to make sure that these employees make the e-learning at the time they start to sell the shoes mentioned in the e-learning or right before. This makes the timing just right for them. It might also be that the employees had already received most of this knowledge during their form of onboarding. Hence this part of the e-learning might be more applicable to new employees, who do not already know the knowledge addressed in the e-learning. When looking at the pre- and posttest, the lack of increase might be because the questions were derived from the question bank of the e-learning, and were slightly modified for the posttest. This could have influenced

the results, since it is plausible that the employees thought they recognized the questions from the e-learning and consequently did not read the questions closely enough.

Overall, this research has shown a new way of assessing and looking at e-learning use in companies. This was done by looking at different and new ways in which e-learning results can be seen (for example the effect of e-learning on customers) as well as a relatively new way of assessing e-learning modules (e.g. through observations instead of just online questionnaires).

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Appendices

Appendix I: Final measurement instrument

Number Employee			
week			
Verbal contact customers		**Observation customer**	**Observation customer**
Sales			
	Subjective reference to product		
	Costs product		
Knowledge			
	feet knowledge		
	Cushioning		
	Demping		
	Gel		
	Support		
	Correction		
	Grip		
	Ride		
	Fit		
	Name of the shoe		
	Knowledge about the store		
	Colour		
	Size		
	General ASCIS knowledge		
	Advising		
Small talk	Welcoming		
	Initiating the conversation		
	Non-related talk		
Questions			
Runs	Frequency		
	Type		
	Runs		
Compare			
Foot ID	Only applicable for Amsterdam		
footwear guide	Only applicable for Bataviastad		

Appendix II: Explanation measurement instrument

Verbal contact customers		
Sales		**Example**
	Subjective reference to product	"That shoe looks really good on you"
	Costs product	"This one is 180 euros"
Knowledge		
	feet knowledge	"Your feet a wider than normal."
	Cushioning	"This shoe has a lot of cushioning"
Part of cushioning	Demping	"This shoe has a lot of demping"
Part of cushioning	Gel	"This shoe has gel in the front"
	Support	"GT 2000 gives more support"
Part of support	Correction	"Do you need a shoe with correction?"
	Grip	"The sole of this shoe provides more grip."
	Ride	"This shoe has a guidance line which helps direct your foot."
	Fit	"This shoe has a tight fit."
	Name of the shoe	"This is the Kayano"
	Knowledge about the store	"We have mirrors over there"
	Colour	"We also have this one in pink."
	Size	"What size do you have? 42?"
	General ASCIS knowledge	"ASICS shoes fall very small."
	Advising	"I would definitely advice you to take this shoe, since it fits your foot profile."
Small talk	Welcoming	"Welcome!"
	Initiating the conversation	"How can I help you?"
	Non-related talk	"Where are you from?"
Questions		"Is the shoe big enough?"
Runs	Frequency	"How often do you run?"
	Type	"Do you run in the forest?"
	Runs	"These are run long shoes."
Compare		"This shoe has more cushioning compared to this one."
Foot ID	Only applicable for Amsterdam	"Would you like to do a Foot ID?"
footwear guide	Only applicable for Bataviastad	"You can do a little foot test which will help you see what kind of runner you are."

Appendix III: Average conversation ASICS sales employee Amsterdam

Number Employee	17[1]	
Week		
Verbal contact customers		**Observation customer**
Sales		.06
	Subjective reference to product	.35
	Costs product	.51
Knowledge		
	feet knowledge	.18
	Cushioning	1.74
	Support	1.52
	Grip	.083
	Ride	.190
	Fit	.357
	Name of the shoe	1.82
	Knowledge about the store	
	Colour	.5
	Size	1.32
	General ASCIS knowledge	2.76
	Advising	.66
Small talk	Welcoming	.214
	Initiating the conversation	.345
	Non-related talk	.452
Questions		2.5
Runs	Frequency	.166
	Type	.345
	Runs	.429
Compare		.940
Foot ID	Only applicable for Amsterdam	.345
footwear guide	Only applicable for Bataviastad	0

[1] This number does not match one of the employees. The scoring depicted is based on the overall average of all participating employees of the Amsterdam store. This means that individual differences will occur, and it can solely be used as an illustrative measure.

Appendix IV: Example average conversation ASICS sales employee Bataviastad

Number Employee	18[2]	
week		
Verbal contact customers		**Observation customer**
Sales		.163
	Subjective reference to product	.599
	Costs product	1.03
Knowledge		
	feet knowledge	.098
	Cushioning	1.27
	Support	.95
	Grip	.022
	Ride	.087
	Fit	.294
	Name of the shoe	1.10
	Knowledge about the store	
	Colour	.795
	Size	1.63
	General ASCIS knowledge	2.70
	Advising	.338
Small talk	Welcoming	.239
	Initiating the conversation	.545
	Non-related talk	.479
Questions		2.89
Runs	Frequency	.305
	Type	.447
	Runs	.098
Compare		.545
Foot ID	Only applicable for Amsterdam	0
footwear guide	Only applicable for Bataviastad	.054

[2] This number does not match one of the employees. The scoring depicted is based on the overall average of all participating employees of the Amsterdam store. This means that individual differences will occur, and it can solely be used as an illustrative measure.

Appendix V: Pretest

ASICS e-learning project

Wat is je geslacht?
Man
Vrouw

Wat is je leeftijd in jaren?

_____

In wat voor dienstverband ben je werkzaam bij ASICS?
Full time
Part time
Hulpkracht

Wat is jouw hoogst afgeronde opleidingsniveau?
Basisschool
VMBO
HAVO/VWO
MBO
HBO
WO

Hoeveel jaren ben jij al in dienst bij ASICS?

_____

De volgende vragen zijn ingedeeld op een schaal van 1-5, waarbij 1 de laagst mogelijke score is en 5 de hoogst. Omcirkel je antwoord voor de volgende vragen:

Welk cijfer zou je ASICS geven als bedrijf?	1	2	3	4	5
Hoe betrokken voel jij je bij ASICS?	1	2	3	4	5
Hoe goed is je beheersing van de Engelse taal?	1	2	3	4	5
Hoeveel kennis heb je van de verschillende RUNS?	1	2	3	4	5
Hoe goed ken je de technologieën die in de schoenen gebruikt worden?	1	2	3	4	5

Het volgende onderdeel is in het Engels. Sla de pagina om, om naar de volgende vragen te gaan.

1) Circle the correct answer for the following statement: The new AHAR ®+ ensures better fit and cushioning.
True
False

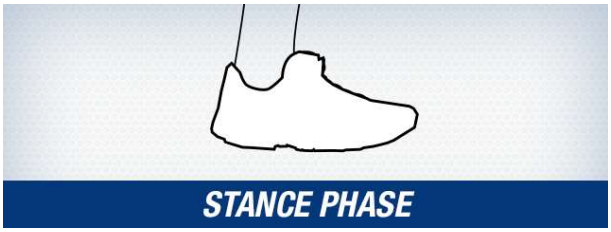
2) Circle the correct answer for the following statement: The Noosi Tri has SUPER SOLYTE® material in the midsole, which is lighter and gives less cushioning than the normal SOLYTE® material.
True
False

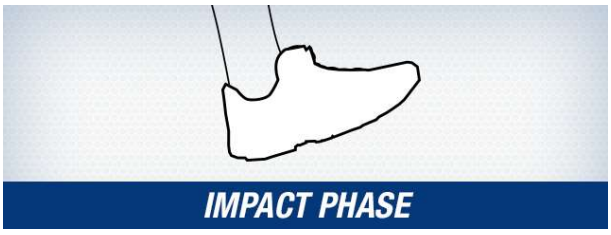
3) Circle the correct answer for the following statement: ASICS GEL^{tm} cushions are placed under the heel, the big toe joint and the ball area to provide optimal cushioning.
True
False

4) Circle the correct answer for the following statement: The Fuji Attack gives high support due to the lacing system and reinforcements in the forefoot.
True
False

5) Circle the correct answer for the following statement: ASICS uses four parameters to describe each running shoe: cushioning, speed, ride, and performance.
True
False

6) During which phase does the TRUSSTIC SYSTEM of the GT3000 give additional stability? Circle the correct answer.





7) Which specific characteristic fits each RUN? Connect the characteristic with the correct RUN.

Training all the senses	RUN LONG
Improving muscle interaction	RUN TOUGH
Speeding up your fat-burning metabolism	RUN NATURAL

8) Connect the right shoe to the corresponding story.

FUJI PRO

For a more experienced runner, seeking for least protection and closest ground feel to wear for all special runs.

33 – DFA

Triathlon specific shoe helping athletes to succeed in a long distance event and standing out in the crowd.

NOOSA TRI

Perfect lightweight shoe for on- and off road use, from your front door to the trails and back.

9) Which shoe has the most plush ride? Circle the correct shoe.

10) One of the following supports the foot and is made from midsole materials. It provides a higher degree of hardness and increased stability. Which material fits this description? Circle the correct answer.

11) Which mental characteristic matches best with each RUN? Connect the characteristic with the correct RUN.

Mental mobilization	RUN LONG
Ambition	RUN FAST
Discovery	RUN TOUGH

12) Circle the correct answer for the following statement: Shoes from the RUN NATURAL category ensure a relaxing run that helps you work on your fine motor skills.
True
False

13) Circle the correct answer for the following statement: RUN LONG is great if you want to work on your basic endurance.
True
False

14) Which picture shows the FLUIDFIT system? Circle the correct answer.

15) How is the upper shoe of the Kayano build up? Circle the correct answer.

16) Circle the correct answer for the following statement: The GT-2000 has a more adaptive CLUTCH COUNTER than the GT-1000. This offers more support for the foot.
True
False

17) Circle the correct answer for the following statement: Shoes from the RUN FAST category are light, have a tight fit and minimal cushioning and support.
True
False

18) Circle the correct answer for the following statement: The Cumulus only has bigger GEL™ elements in the rearfoot to absorb the shock.
True
False

19) Circle the correct answer for the following statement: Shoes from the RUN TOUGH category are perfect for long-distance runs on roads and paths.
True
False

20) Circle the correct answer for the following statement: The 33 M has, just like the 33 FA, an ENGINEERED MESH, with open and closed zones for better ventilation and stability.
True
False