

# Factors influencing teachers' intentions to integrate smartphones in language lessons

**Saskia O'Neill**

Language Trainer, Ireland  
oneill.saskia@gmail.com

**Karel Kreijns**

The Open University, The Netherlands  
karel.kreijns@ou.nl

**Marjan Vermeulen**

Welten Institute  
The Open University, The Netherlands  
marjan.vermeulen@ou.nl

*Research has shown that mobile technology could enhance the effectiveness of common language learning activities but in practice, few teachers are using mobile devices. Fishbein and Ajzen's (2010) reasoned action approach was used to identify to which extent certain personal factors influenced teachers' intentions to integrate smartphones in their language lessons. Data were collected from 63 teachers at language centres connected to 15 institutes for Higher Education in the Netherlands. Four subgroups were distinguished based on two variables: first basic versus smartphone owners and second non versus frequent phone users. The subgroup of basic phone owners had less favourable feelings, and a subgroup of frequent phone users had more favourable feelings towards integrating smartphones in their lessons compared with the whole group. Differences in the number of hours teachers worked and age were not significant. Some differences were found in the role of perceived norm and perceived behavioural control for the whole group and for the subgroup of smartphone owners (n = 49). This study contributed to the growing number of studies that found Fishbein and Ajzen's model suitable for predicting technology acceptance in an educational context.*

**Keywords:** reasoned action approach, smartphones, foreign language lessons, Dutch higher education

## 1. Introduction

The use of mobile technology has seen an enormous growth in the past decade and educational researchers studied its use in a wide range of settings. Schroeder, Minocha

Table 1. Overview of research on teachers use of pedagogical mobile technology in the field of language education.

Project	Purpose of the study	Findings	Country	Authors
University students and teachers	Insight in the extend of mobile phone use by teachers and students reaction on using mobile phones in educational practice for language learning	Showed effective use of mobile technology included teachers who texted English vocabulary lists to students	Japan	Thornton & Houser, 2005
Preservice teachers	Preservice teachers' perceptions about using mobile phones	Preservice teachers (1087) perceived laptops as more usable than mobile phones. The result imply an urgent need to create awareness among student teachers for mobile learning	Turkey	(Şad, & Göktaş, 2014)
Language teachers	Teachers studying in M. Ed programs in Australia and Greece, discussed the use of mobile phones in language classrooms.	barriers exist in the use of mobile phones in the classroom, including bans on use in schools, lack of familiarity with educational use, and negative perceptions specifically in terms of classroom management	Australia and Greece,	(Woodman, 2014)
Foreign language English teachers higher education	Exploring the current use of mobile phones as an instructional tool and the preferences of teachers to use it.	Most of the participants prefer the use of mobile phones to teach English as foreign language	Turkey	Cakir (2015)
Second language teachers	Mobile technology use in the practice of experienced second language teachers	Based on teachers rationales, stated beliefs and classroom actions, teachers tend to prohibit or reluctantly tolerate mobile device usage, although they recognise some of its potential.	United Kingdom	(Van Praag & Sanchez, 2015)
Teachers and their undergraduate male students	Perceived effectiveness of mobile technology on learning English as a foreign language.	Both students and teachers think that mobile technology is accelerating and improving English language learning abilities	Saudi Arabia	Nalliveettil & Alenazi, 2016
Overview of six articles on foreign language teaching	To enrich teachers knowledge and broaden paradigm of using mobile phones.	Positive views on mobile learning, it increased accessibility, improved communication and is convenient in using.	Indonesia	(Kurniawan, 2018)

and Schneidert (2010) for example, analysed twenty projects using social software such as wikis, blogs and Twitter, often used with mobile technology, for learning and teaching. They concluded that the use of social media could positively contribute to interactive and collaborative learning, as long as certain protocols, technological support, and a code of conduct were in place in order to manage the drawbacks. In an overview of ten years of mobile learning research, Sharples, Arnedillo-Sanchez, Milrad and Vavoula (2009) stated that applications like classroom voting and response systems, collaborating through mobile technology and mobile learning for basic, repetitive tasks were most promising. A more recent overview on mobile devices concluded that studies focusing on reading, listening and speaking had mobile devices had advantage over other forms of learning and studies focusing on vocabulary had no significant differences (Burton, 2015). Research projects on teachers in the field of foreign language education are conducted in many different situations, countries and have different outcomes. In Table 1 an overview of some of the research on teachers' perceptions on the use of mobile learning devices is given.

Not limited to language learning, most recently, researchers have started discussing how students' own mobile phones could be used in the classroom, also referred to as Bring Your Own Device (BYOD), which has rapidly been gaining support in scientific publications (Al-Okaily, 2013; Norris & Soloway, 2011; Santos, 2013; Traxler, 2010; United Nations Educational Scientific and Cultural Organisation (UNESCO), 2013). However the research on the topic is not conclusive, some find positive feelings towards the use of mobile phones (Cakir, 2015; Nalliveettil & Alenazi, 2016). While others report that teachers are often reluctant to let students use their mobile phones (Woodman, 2014; Van Praag & Sanchez, 2015).

The goal of this study was firstly, to identify to which extent certain personal factors influenced teachers' intentions to integrate smartphones in their lessons. The theoretical model used was Fishbein and Ajzen's (2010) reasoned action approach. This model focusses on behavioural intention as the central variable, which is presumed to be predicted by three proximal variables: attitude, perceived norm and perceived behavioural control, which in turn are presumed to be explained by their underlying belief variables, which in turn are presumed to be predicted by domain specific distal variables. The model and hypotheses derived from this theory, are further expanded on in the next section.

## 2. Theoretical framework

As our research is focusing on teachers' behavior with respect to integrating smartphones in language lessons, Fishbein and Ajzen's (2010) reasoned action approach (RAA) was adopted as the theoretical framework because it is well suited for investigating such behavior. The RAA framework concentrates on the prediction whether a particular behavior of interest will be performed or not from a number of background (i.e., distal) – such as age and gender – and foreground (i.e., proximal) variables – such as attitudes and intention. The canonical RAA framework is depicted in Figure 1 and is a slightly adapted version of the RAA framework as found in Fishbein and Ajzen's book (2010, p. 22) in order to include weights for each belief type (e.g., outcome beliefs are weighed by their evaluations) as suggested by Ajzen and Fishbein (2008) and Fishbein and Ajzen (2010).

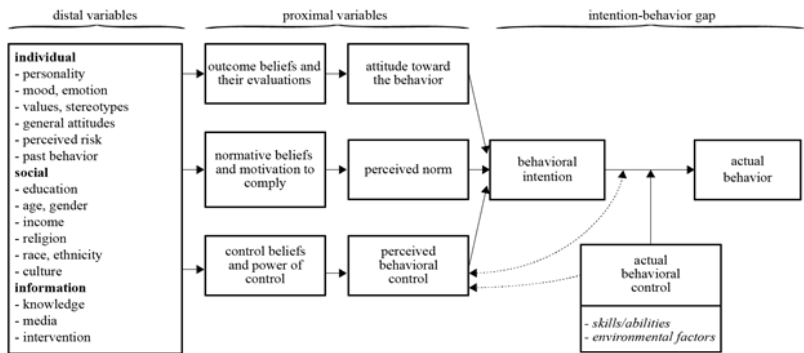


Figure 1. The slightly adapted version of the canonical RAA framework as found in Fishbein and Ajzen’s book (2010, p. 22)

It should be noted that the RAA framework is a result of more than 30 years of research and, therefore, has many predecessors. The oldest one is the theory of reasoned action (TRA; see Fishbein, 1967; Fishbein & Ajzen, 1975), which was extended in 1985 and referred to as the theory of planned behavior (TPB; see Ajzen, 1985, 1991). The difference between the two is that the performance of the target behavior is completely volitional in TRA but in TPB constrained by the inclusion of Bandura’s (1977) notions of self-efficacy so to cover non-volitional behaviors. Fishbein (2000) refined the TPB by looking at other influences that limit the prediction of the performance of a target behavior and called it the integrative model of behavior prediction (IMBP). In 2010, Fishbein and Ajzen joined forces once again and proposed the RAA framework (Fishbein & Ajzen, 2010) as their last revision of their theory.

It should also be noted that though the RAA framework and its predecessors were used predominantly in the domain of health education and prevention, Fishbein and Ajzen (2010) pointed out their framework could be applied in any context because it allows for the choice of domain-specific variables. Indeed, the RAA framework or its predecessors were successfully applied in the domain of teachers’ adoption of technology in the classroom. For example, Lee and colleagues (2010) used [TRA|TPB|IMBP|RAA] to examine computer use in the classroom, Siragusa and Dixon (2009) found TPB useful for gaining insight into students’ attitudes towards using ICT, Teo and Lee (2010) using [TRA|TPB|IMBP|RAA] examined pre-service technology use, and Cheon and colleagues (2012) used TPB to investigate college students’ acceptance of mobile learning. Kreijns and colleagues (2013) investigated teachers’ adoption of digital learning materials in their lessons using the IMBP framework. Admiraal and colleagues (2013) also used the IMBP framework for a study into teacher trainers’ use of hardware and software technology and confirmed it to be a suitable model. All these examples convinced us to use the RAA framework for the current study.

Central in RAA is the relationship between behavioral intention and actual behavior. Behavioral intention is the readiness to perform or not to perform a given target behavior. In our study, the target behavior was defined as “integrating smartphones in language lessons” within the context of foreign language teachers in Dutch institutes for higher education. Behavioural intention incorporates concepts as willingness, behavioural expectations, and trying to perform the behavior (Fishbein & Ajzen, 2010, p. 43). It is the most important immediate antecedent of behavior and, therefore, a predictor of behavior. The

stronger the behavioural intention, the more likely it will be that the behaviour will be carried out. However, the relationship is not perfect as other variables may have to be taken into account influencing the translation from intention into actual behavior. One such variable is actual behavioural control over the performance of the behavior, which is moderating the translation of behavioral intentions into actual behavior. If language teachers discover that environmental constraints (e.g., bad wifi in the classroom) or lack of skills and abilities (e.g., insufficient knowledge about how smartphones can be best pedagogically exploited for language learning) is complicating this translation, it may lead to incomplete performance of the behavior or to no performance at all causing the so-called intention-behavior gap. Actual behavioural control is the counterpart of perceived behavior control, which is an immediate antecedent of behavioural intention. Perceived behavior control (or self-efficacy) is the belief that the desired behavior can be performed because one trusts his/her own capacity to do so. It is based in one's belief of possessing the necessary skills and abilities and the belief that one can exert sufficient control to cope with unsolicited problems. When the gap between perceived and actual behavior control is narrowing, the relationship between behavioural intention and actual behavior becomes stronger. In our study, however, we did not assess actual behavior nor did we assess actual behavior control and rely on behavioral intentions as a relatively good predictor for actual behavior (Fishbein & Ajzen, 2010, p. 48-51). Attitude and perceived norm are two other immediate antecedents of behavior intention. Attitude is the extent to which one takes a favourable versus unfavourable position in relation to the target behavior. In other words, language teachers may have formed a more or less favourable position over integrating smartphones in their lessons. This attitudinal position has an experiential and an instrumental dimension; the first refers to the potential pleasure/enjoyment language teachers may experience when they integrate smartphones in their lessons, the second refers to the potential usefulness in learning a foreign language when smartphones are integrated in language lessons. Perceived norm is the felt social pressure of language teachers to integrate smartphones in their lessons. Perceived norm is the result of the injunctive norm where significant others (e.g., the director of the language centre) exert this social pressure and of the descriptive norm where groups (e.g., colleagues) do exert social pressure because the group adhere to the target behavior. Each of the three immediate antecedents of behavioral intention – attitude, perceived norm, and perceived behavioural control – has associated sets of underlying weighed beliefs; attitude is associated with outcome beliefs weighed by their evaluation. The outcome beliefs are the beneficial consequences when language teachers integrate smartphones in their lessons. Each outcome belief is assessed on its likelihood that it will be a consequence of integrating smartphones in lessons and is weighed by its evaluation in terms of how important this consequence is. Perceived norm is associated with injunctive and descriptive normative beliefs weighed by motivation to comply; that is, for the case of injunctive normative beliefs, the extent to which a language teacher would do what significant others expect language teachers should do (namely, integrating smartphones in the lessons) and for the case of descriptive normative beliefs, the extent to which a language teacher would be like the reference group (and, thus, should integrate smartphone in the lessons like the group does). Control beliefs represent beliefs that performing the target behavior will be facilitated or impeded by certain factors. These factors are then weighed by power of control; that is, if the factor is facilitating the target behavior, the extent to which this factor makes it easier to perform the behavior. If the

factor is impeding the target behavior, power of control is the extent to which the factor makes it more difficult to perform the behavior (Fishbein & Ajzen, 2010, p. 170–172).

All sets of underlying weighed beliefs are influenced by a number of distal variables. The canonical RAA framework depicted in Figure 2 lists some of these variables categorized as individual, social or information. However, Fishbein and Ajzen (2010) leaves is completely up to the researchers what distal variables are being used for their research. In our study, three relevant distal variables are investigated.. First of these was teachers’ knowledge of using smartphones for personal purposes. Previous research implied that teachers who did not own or rarely used mobile phones felt less capable of handling these devices (Kommers, 2005; McFarlane, Roche, & Triggs, 2007), in which case they probably found it hard to imagine themselves designing suitable learning activities for smartphones. The second distal variable was the language centre’s policy towards using smartphones in the classroom. Many schools and teachers have been banning mobile phones from the classroom (Kommers, 2005; Sharples et al., 2009). Although some teachers decided to break the bans (Nielsen & Webb, 2011), these sorts of rules still withheld many others from introducing mobile technology into their lessons (Sharples et al., 2009; UNESCO, 2013; Wishart, 2008). Therefore, it was anticipated that language centre’s policy towards using mobile phones in the classroom would influence teachers’ beliefs with more positive policies leading to more favourable beliefs and more negative policies leading to unfavourable beliefs. The third distal variable was teachers’ knowledge of using smartphones for didactic purposes. Several previous studies showed that teachers who were not familiar with didactic applications of mobile technology may have refrained from adopting it (Kommers, 2005; Kukulska-Hulme, 2009) and that information and training regarding these didactic applications helped teachers adopt mobile technology (Wishart, 2008). It was therefore anticipated that teachers’ knowledge of using smartphones for didactic purposes would influence their behavioural beliefs. Figure 2 shows RAA as adapted for this study.

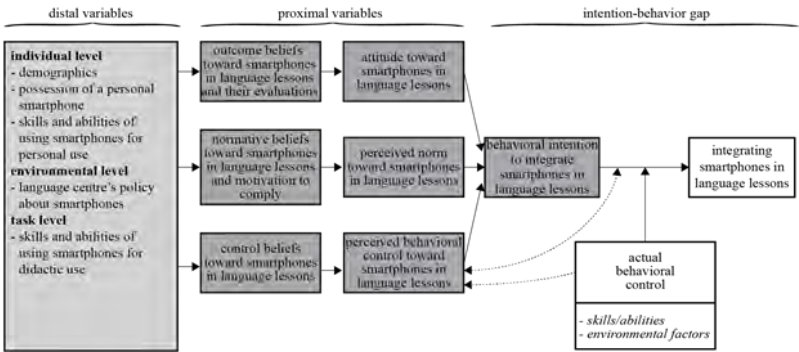


Figure 2. Reasoned Action Approach (RAA) as adapted with relevant distal variables in light grey and intention, proximal variables and underlying beliefs in dark grey.

This study focussed on three questions. The first concerned the proximal variables: “Is each of the proximal variables (attitude, perceived norm and perceived behavioural control towards integrating smartphones in the classroom) related to teachers’ intentions to integrate smartphones in their lessons?” The second question focussed on the underlying

beliefs: "What is the influence of each of the underlying variables outcome beliefs, normative beliefs and control beliefs, on the corresponding proximal variables attitude, perceived norm and perceived behavioural control?" The third question focussed on the three distal variables (background factors): "What is the influence of each of the three distal variables (teachers' knowledge of using mobile phones for personal purposes, the language centre's policy and teachers' knowledge of using smartphones for didactic purposes) on teachers' outcome beliefs, normative beliefs and control beliefs towards using smartphones in language lessons?" Based on the findings of previous research in the field, these questions led to the following hypotheses:

**Hypothesis 1.** The proximal variables influence teachers' intentions to integrate smartphones in their lessons.

- (1.1) Attitude influences teachers' intentions.
- (1.2) Perceived norm influences teachers' intentions.
- (1.3) Perceived behavioural control influences teachers' intentions.

**Hypothesis 2.** Teachers' beliefs towards smartphones in language lessons influence the three proximal variables.

- (2.1) Outcome beliefs and their evaluations influence teachers' attitudes.
- (2.2) Normative beliefs and motivation to comply influence teachers' perceived norm.
- (2.3) Control beliefs influence teachers' perceived behavioural control.

**Hypothesis 3.** The distal variables influence teachers' beliefs towards smartphones in language lessons.

- (3.1) Teachers' experiences with using mobile phones for personal purposes influences their outcome beliefs and control beliefs.
- (3.2) Institute's policy influences teachers' outcome beliefs, normative beliefs and control beliefs.
- (3.3) Teachers' experiences with using smartphones for didactic purposes influences their outcome beliefs and control beliefs.

A fourth hypothesis regarding the extent to which indirect influences in the model were mediated by direct influences was considered but not pursued as the complexity and effort involved in testing such a hypothesis was beyond the scope of this study.

### 3. Method

In line with the theoretical framework, this study used a survey to collect data. Two aspects were given special attention, as recommended by Fishbein and Ajzen (2010). The first was the description of the behaviour under study, which should be as precisely as possible and should include four elements: action, target, context and time. In our study however, the element time was not fully compatible with the target behaviour of integrating smartphones. As for example Earle (2002) and Chambers and Bax (2006) pointed out, the level of integration of technology in education is not determined by how much or how often technology is used, but by the way in which it is used. Therefore, the term integration in this study was understood as technology being used for pedagogic activities during lessons. The behaviour under study was consequently operated into: using (action) smartphones

(target) in their lessons (context) in an integrative way (how instead of time). The second aspect was the description of the measures of all variables, which should use exactly the same wording as the behaviour under study. This 'principle of compatibility' was strictly followed in the questionnaire design.

### 3.1 Participants

The aimed population consisted of teachers at language centres in Dutch higher education and was characterised by teachers of English and teachers of Dutch as a foreign language. Some were employed by the university, but the majority worked on a freelance basis; many of them worked part time. The aim was that all teachers of these 18 language centres completed the questionnaire. As lists of employees were not publicly available, the total number of potential teachers was unknown and it was part of the procedure to enquire about this.

### 3.2 Measures

The questionnaire used for this study was based on the sample provided by Fishbein and Ajzen (2010) and consisted mostly of seven-point Likert scales. Underlying variables (salient beliefs and background factors) were derived from previous research in the field (Kreijns, Van Acker, Vermeulen, & van Buuren, 2013). The questionnaire started with six general questions regarding for example type of contract, full time or part time work and language taught. This information was used for creating subgroups and for covariates in the regression analyses.

The next section contained items regarding teachers' possession and use of mobile phones for personal and didactic purposes and the language centre's policy towards mobile phones in the classroom (see Appendix for the whole survey). Some of these questions (for example "How experienced are you in using smartphones for personal purposes?" and "To what extent are you familiar with voting and response programmes for smartphones?") measured the distal variables knowledge of using mobile phones for personal purposes, language centre's policy and knowledge of using smartphones for didactic purposes. Others (for example "Which type of phone have you got?" and "How often do you use smartphone apps for vocabulary learning?") were used to create subgroups on two variables, first the sample was divided in smartphone owners ( $n = 49$ ) versus ( $n = 13$ ) And a second time in basic mobile phone owners frequent mobile phone users ( $n = 26$ ) versus average or infrequent mobile phone users ( $n = 33$ ).

The remaining questions related to the seven variables of the reasoned action model. Respondents' current behaviour and intentions for the near future (BIN), were measured with one question regarding actual behaviour ("I am already using smartphones in my lessons in an integrative way" 1 = yes, 2 = no) and, if respondents answered negatively, three questions regarding their intentions (for example "I want to use smartphones in my lessons in an integrative way before the end of 2014" 1 = totally true, 7 = totally untrue).

The proximal variable attitude (ATT) was measured with four bipolar items which directly asked participants about their opinions. Two of these measured the experiential dimension of attitude (for example "Using smartphones in my lessons in an integrative way is" 1 = good, 7 = bad) and the other two measured the instrumental dimension (for example "Using smartphones in my lessons in an integrative way is" 1 = necessary, 7 = unnecessary).

98 The proximal variable perceived norm (PNO) was measured with three items which



directly asked participants about the social pressure they perceived towards integrating smartphones in their lessons (for example “Most people who are important to me think that I should use smartphones in my lessons in an integrative way” 1 = totally true, 7 = totally untrue). Two of these items related to participants’ perceptions of what others thought that they should do (injunctive norms) and one related to their perception of what others did themselves (descriptive norms).

The proximal variable perceived behavioural control (PBC) was measured with three items which directly asked about the level of control that participants experienced regarding the use of smartphones in their lessons. Two of these measured the aspect of autonomy (for example “Whether I use smartphones in my lessons in an integrative way is entirely up to me” 1 = totally agree, 7 = totally disagree) and one measured the aspect of capacity (“If I really want to, I can use smartphones in my lessons in an integrative way” 1 = very likely, 7 = very unlikely).

The underlying variable outcome beliefs (OutcBel) was measured with eight questions; the first four related to perceived educational benefits of smartphones (for example “If I use smartphones in my lessons in an integrative way, more students will take part in discussions” 1 = very likely, 7 = very unlikely). Each of these had a corresponding item measuring how respondents evaluated the possible outcome (for example “To what extent do you think it is important that all students take part in discussions” 1 = very important, 7 = totally unimportant). In order to obtain the total value of the variable outcome beliefs, each outcome belief was multiplied by its evaluation after which the four scores were summed, as recommended by Fishbein and Ajzen (2010).

The underlying variable normative beliefs (NormBel) was measured with eleven items. The first four items measured teachers’ perceived injunctive norms (for example “My friends think that I should use smartphones in my lessons in an integrative way” 1 = very likely, 7 = very unlikely). Each of these questions had a corresponding item measuring the motivation to comply with these norms (for example “When it comes to my teaching, I want to do what my friends think I should do” 1 = totally agree, 7 = totally disagree). Following the same steps as for outcome beliefs, the value of the injunctive aspect of normative beliefs was the sum of each belief multiplied by its corresponding motivation to comply. The descriptive aspect was measured with the next three items (for example “My colleagues at the language centre use smartphones in their lessons in an integrative way” 1 = totally true, 7 = totally untrue) and the last normative belief item asked about the extent to which participants identified with their colleagues (“When it comes to teaching, to what extent do you want to be like your colleagues? 1 = very much, 7 = not at all). Each of the descriptive norm items was multiplied by the item measuring identification with colleagues, after which the three values were summed. The value of the normative belief scale consisted of the sum of the total injunctive norm plus the total descriptive norm.

Regarding the underlying control beliefs (ConBel), Fishbein and Ajzen (2010) suggested using items measuring control belief strength, each multiplied by the corresponding control belief power. However, as this method was not yet fully established and experts were still discussing whether this type of measurement worked (Fishbein & Ajzen, 2010; Yzer, 2012a), it was decided to use questions regarding respondents’ ability to use smartphones in their lessons despite potential obstacles (for example “Even if the language centre doesn’t offer information about didactic applications of smartphones, I can use smartphones in my lessons in an integrative way.” 1 = totally agree, 7 = totally disagree), which were then summed to obtain the total value of control beliefs.

The questionnaire was distributed in digital form through Google Drive documents. The document was in Dutch and it was sent to the teachers by an administrator from each language centre, both because this made for a more personal message and because this complied with the requirement of anonymity. Follow up emails were sent to remind teachers of the deadline for participation. After collection of responses, all scores were recoded so that higher numbers indicated positive feelings and lower numbers indicated negative feelings towards using smartphones. An overview of all measures can be found in the Appendix.

### 3.3 Procedure

In March 2014, a first version of the questionnaire was sent to some teachers, not members of the aimed population, as a pilot. Five teachers completed the questionnaire and provided feedback. Based on their advice some changes were made, especially in the wording. Simultaneously, all 18 language centres were asked for their co-operation in an introductory email. Two language centres did not want to take part, while 12 others agreed to participate. The four remaining language centres continued to be on the mailing list as “cold contacts”.

The digital questionnaire, together with a short explanation of the nature and purpose of the study, was distributed at the end of March 2014. Teachers were assured that participation was voluntary, anonymous and that any information they gave would be treated confidentially. Eleven contact persons confirmed the number of teachers they had forwarded the link to. Based on these numbers and the fact that according to respondents’ answers, 10% worked for more than one language centre (and therefore was counted more than once), the number of teachers that received the questionnaire was estimated at 225. Once the deadline had passed after a second round of distribution, all responses were collected and analysed using SPSS version 22.

### 3.4 Analyses

First, responses were reviewed for response rate and distributions. Next, reliability of the seven scales was calculated using Cronbach’s alpha and means and standard deviations of all variables were studied. After standardizing all values, data were disaggregated into several subgroups in order to determine whether they differed from the whole group. Finally, the three hypotheses were tested using bivariate correlations followed by multiple regression analyses.

## 4. Results

From the estimated sample of 225 respondents, 66 questionnaires were returned, therefore the response rate was 29.3%. One respondent had more than 50% missing answers and was removed. Two respondents did not own a mobile phone. These were considered outliers and their data were also removed, reducing the number of responses for analyses to 63. This group consisted of 34.9% men and 63.5% women (one missing answer), most (31.7%) were between 46 and 55 years old, 21 taught English, 41 taught Dutch and one respondent taught both languages. In order to warrant anonymity, this last respondent was added to the group of English teachers for further analyses. Distributions specified by language taught can be found in Table 2.

Table 2. Sample distribution of gender, age and type of contract per language taught (n = 63).

Language	Gender		Age		Contract	Freelance	Hours/week	
	Men	Women	max. 45	max. 55			< 20	>36
English (n = 22)	10(45.5%)	12 (54.5%)	59.1%	86.4%	52.4%	47.6%	27.3%	31.8%
Dutch (n = 41)	12(29.3%)	28 (68.3%)	37.5%	72.5%	58.5%	41.5%	27.5%	10.0%

The seven scales of the model were tested for internal consistency and it was found that they ranged from highly consistent for behavioural intention, attitude and control beliefs to fairly consistent for perceived norm, perceived behavioural control and normative beliefs. Values for all scales can be found in Table 3.

Next, the mean scores for each variable were studied and the following observations were made. The mean of 11.79 for behavioural intention indicated that on average, respondents thought it was neither likely nor unlikely they would integrate smartphones in their lessons in the near future. Out of the three proximal variables, two had a mean score that was not close to neutral. Firstly, the mean of 14.66 for PBC, was significantly different from the neutral score ( $t(61) = 5.05, p < .05, r = 0.54$ ), indicated that when asked directly, respondents slightly agreed they had the capacity and autonomy to integrate smartphones in their lessons. The mean score of 8.32 for perceived norm, also was significantly different from the neutral score ( $t(61) = -7.63, p < .05, r = 0.70$ ), but was on the negative side of the scale, indicating that on average, these teachers slightly disagreed they felt social pressure towards using smartphones in their lessons. Finally, all three belief scales had mean scores that were close to neutral, indicating that on average, respondents held neither favourable nor unfavourable beliefs towards smartphones in language lessons. When individual items of the belief scales were reviewed, it was noted that "learning vocabulary" was considered the most positive application and compared with friends, colleagues and superiors, the only reference group from which respondents felt some social pressure were their students. Mean scores and standard deviations for all scales are listed in Table 3.

Table 3. Descriptive statistics and internal consistency of the seven scales of the model

Scale	n	Items	Actual range	M	SD	A
1. Behavioural intention	63	3	3–21	11.79	6.08	.97
2. Attitude	63	4	–8–12	3.16	4.13	.87
3. Perceived norm	62	3	3–21	8.32	3.80	.68
4. Perceived behavioural control	62	3	4–21	14.66	4.15	.69
5. Outcome beliefs and their evaluations	63	8	28–175	116.63	32.55	.79
6. Normative beliefs and motivation to comply	61	12	–92–34	–18.16	24.96	.68
7. Control beliefs	63	5	5–35	19.70	8.11	.91

Based on the mean score of the first distal variable it was found that on average, teachers had neither strong nor weak knowledge of using mobile phones for personal purposes. The mean score of the distal variable knowledge of using smartphones for didactic purposes showed that on average, teachers had fairly little knowledge in this area. The responses

regarding language centre's policy seemed to lack consistency. Teachers' perceptions about one and the same institute differed greatly and it was decided to use only one item "What kind of policy towards using smartphones does the language centre where you work have?", for further analyses. However, 55.4% of respondents had answered "I don't know", which brought the number of respondents for the variable language centre's policy as used in further analyses to 26. The mean score of 1.85 indicated that on average, these 26 teachers perceived their language centre's policy towards using smartphones in the classroom as being slightly positive. Three teachers answered that their language centre banned the use of mobile phones in the classroom, but all three said they were willing to use smartphones despite the perceived ban. The three respondents were from two different age groups, two of them taught English and one Dutch, they all had different contract types and worked for different language centres. There was no clear positive or negative trend in their scores on belief variables, proximal variables and intention to integrate smartphones.

In order to see if mean scores were different for certain subgroups within the sample population, all data were standardized and disaggregated according to firstly, whether respondents owned a smartphone or a basic phone, secondly, whether they used their phone frequently or infrequently, thirdly, the number of hours they worked per week and finally, respondents' age. Descriptive statistics for these subgroups were studied and the following observations were made. The scores of respondents who owned a basic phone ( $n = 13$ ) were less favourable than those of all respondents together ( $n = 49$ ). Out of all subgroups, basic phone owners' seemed least likely to integrate smartphones in their lessons in the near future. However, with a z-score of  $-.01$ , their perceived behavioural control hardly differed from that of the whole group. The subgroup with the most favourable scores were the frequent phone users' ( $n = 26$ ), while the subgroup smartphone owners showed only slightly more positive scores compared with the aggregate. Subgroups based on number of hours teachers worked per week and based on age did not show any clear trends in a certain direction compared with the aggregate. The means and standard deviations for all subgroups can be found in Table 4.

Following the descriptive statistics, correlation and regression analyses were conducted for the whole group ( $n = 63$ ) and for the subgroup of smartphone owners ( $n = 49$ ). The first bivariate correlation analysis involved the aggregated data, using z-scores. Kendall's tau was chosen because of the small sample size. The outcome showed that the intention to integrate smartphones correlated significantly with all other variables in the model. Furthermore, control beliefs and outcome beliefs correlated significantly with all proximal variables, but the normative belief variable only correlated with attitude and perceived norm, not at all with perceived behaviour control. Finally, the distal variable knowledge of using mobile phones for personal purposes correlated significantly with all behavioural beliefs, whereas knowledge of using smartphones for didactic purposes correlated only with control belief and policy only showed some correlation with normative belief. All in all, it seemed that for the whole group of teachers, if a teacher's attitude became more favourable, the intention to integrate smartphones increased. This was also true for perceived norm, but less so for perceived behavioural control. Correlations can be found in Table 5.

Table 4. Subgroups' means and standard deviations compared to whole group data using z-scores

	BIN	ATT	PNO	PBC	Outc Bel.	Norm Bel.	Con Bel.	KNO per	POL	KNodid
Aggregate										
<i>n</i>	63	63	62	62	63	61	63	63	26	63
<i>M</i>	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<i>SD</i>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Smartphone owners										
<i>n</i>	49	49	48	49	49	48	49	49	19	47
<i>M</i>	.14	.12	.09	.00	.14	.13	.15	.40	.07	.11
<i>SD</i>	.99	.93	1.05	.94	.91	1.00	.93	.70	.90	.99
Basic phone owners										
<i>n</i>	13	13	13	13	13	12	13	13	7	13
<i>M</i>	-.45	-.39	-.27	-.01	-.55	-.48	-.55	-1.52	-.18	-.43
<i>SD</i>	.95	1.19	.79	1.24	1.21	.92	1.13	.31	1.30	.96
Frequent mobile phone users										
<i>n</i>	26	26	25	25	26	26	26	26	13	25
<i>M</i>	.39	.20	.18	.29	.26	.14	.36	.65	.00	.43
<i>SD</i>	1.02	.84	.89	.86	.86	1.07	.72	.51	.94	.90
Infrequent mobile phone users										
<i>n</i>	33	33	33	33	33	32	33	33	10	32
<i>M</i>	-.31	-.10	-.21	-.25	-.11	-.06	-.36	-.57	.07	-.46
<i>SD</i>	.80	.94	.94	.94	.95	.82	.99	.93	1.20	.85
Teachers who worked < 20 hours p/wk										
<i>n</i>	17	17	17	17	17	16	17	17	5	17
<i>M</i>	.08	-.01	-.15	.32	-.12	-.11	-.04	.01	.48	.04
<i>SD</i>	1.03	1.07	.98	1.00	.96	.88	.94	.93	.61	.94
Teachers who worked 20–36 hours p/wk										
<i>n</i>	34	34	34	33	34	33	34	34	14	32
<i>M</i>	-.07	-.12	.02	-.08	-.02	.11	-.13	-.04	-.18	-.07
<i>SD</i>	1.00	.98	1.05	.98	1.09	1.05	1.10	1.10	.99	1.05
Teachers who worked >36 hours p/wk										
<i>n</i>	11	11	10	11	11	11	11	11	7	11
<i>M</i>	.09	.34	.28	-.20	.23	-.14	.44	.21	.02	.13
<i>SD</i>	1.07	1.01	.84	1.09	.82	1.10	.75	.84	1.23	1.08
Teachers who were younger than 46 years										
<i>n</i>	28	28	27	28	28	27	28	28	11	27
<i>M</i>	-.04	-.19	.04	.09	.01	-.14	.08	.43	.09	.02
<i>SD</i>	1.06	.92	1.09	1.03	.98	1.12	.96	.81	.96	1.06
Teachers who were 46 years or older										
<i>n</i>	34	34	34	33	34	33	34	34	14	33
<i>M</i>	-.01	.15	-.05	-.07	-.03	.11	-.08	-.36	.02	-.06
<i>SD</i>	.94	1.06	.95	1.00	1.04	.91	1.05	1.02	1.05	.95

Table 5. Correlations for the whole group, non-significant correlations omitted.

Scale	n	1	2	3	4	5	6	7	8	9
1. Knowl. personal	63									
2. Policy	26									
3. Knowl. didactic	61	.37**								
4. Outcome beliefs	63	.20*								
5. Normative beliefs	61	.26**	.30*		.29**					
6. Control beliefs	63	.34**		.33*	.17*	.18*				
7. Attitude	63		.48**	.19*	.36**	.25**	.35**			
8. Perceived norm	62	.18*	.38**		.26**	.32**	.25**	.43**		
9. PBC	62	.16*		.20*	.20*		.33**	.16*		
10. Intention	63	.23**	.55**	.31**	.24**	.36**	.32**	.53**	.44**	.20*

\*\*  $p < .01$ , (1-tailed)  
\*  $p < .05$ , (1-tailed)

Next, the bivariate correlation analyses were repeated for the subgroup smartphone owners. When the outcomes were compared with those of the aggregated data, some observation were made. First, the correlation between the proximal variable perceived behaviour control and the intention to integrate smartphones, was stronger for smartphone owners. On the other hand, the correlation between teachers' outcome beliefs and their intention to integrate smartphones was non-significant for smartphone owners. Furthermore, the distal variable policy no longer showed significant correlations with any of the behavioural beliefs and both normative beliefs and perceived norm showed fewer, weaker and less significant correlations with other variables in the model. All in all, it seemed that for smartphone owners, the intention to integrate smartphones still increased when a teacher's attitude became more favourable, but perceived behaviour control seemed to play a more significant role, too. Correlations for the subgroup smartphone owners can be found in Table 6.

Table 6. Correlations for subgroup of smartphone owners, non-significant correlations omitted.

Scale	n	1	2	3	4	5	6	7	8	9
1. Knowl. personal use	49									
2. Policy	19									
3. Knowl. didactic use	47	.37**								
4. Outcome beliefs	49									
5. Normative beliefs	49	.22*		.18*	.20*					
6. Control beliefs	48	.34**		.36**						
7. Attitude	49		.36*	.28**	.25**		.36**			
8. Perceived norm	48	.18*		.23*	.19*	.29**	.26**	.36**		
9. PBC	49	.31**		.28**	.27**		.41**	.28**	.21*	
10. Intention	49	.19*	.51**	.41**		.35**	.34**	.49**	.40**	.32**

\*\*  $p < .01$ , (1-tailed)  
\*  $p < .05$ , (1-tailed)

Finally, the three hypotheses were tested using multiple regression analyses. For the first hypothesis, behavioural intention was regressed on the three proximal variables attitude, perceived norm and perceived behavioural control, and they accounted for 47.4% of the variability of behavioural intention. *B*-values showed that out of the three proximal variables, attitude had the strongest influence on intention with ( $t(63) = 3.67, p < .001$ ), *B* .43 followed by perceived norm with ( $t(62) = 2.54, p < .05$ ), *B* .29. Teachers' perceived behavioural control however, did not have a significant influence. Therefore, hypothesis 1 was only partially confirmed; 1.1 and 1.2 were confirmed but 1.3 was not confirmed.

In order to test the second hypothesis, each of the three proximal variables attitude, perceived norm and PBC were regressed on outcome, normative and control beliefs. The three belief variables accounted for 38.4% of the variability of the proximal variable attitude and as expected, the outcome beliefs had the strongest influence on the proximal variable attitude with ( $t(63) = 3.57, p < .05$ ), *B* .42. Also, there was an unexpected additional correlation between teachers' control beliefs and their attitudes with ( $t(63) = 2.87, p < .05$ ), *B* .31. It should be noted however that Fishbein and Ajzen (2010) pointed out that the proximal variable attitude would only be influenced by its underlying outcome beliefs and that correlations with other beliefs might be explained by the existence of some distal variable that influenced all three beliefs. Regarding the proximal variable perceived norm, it was observed that the three belief variables accounted for 26.7% of its variability, and that teachers' normative beliefs had a significant influence on their perceived norm ( $t(61) = 2.09, p < .05$ ), *B* .29. Furthermore, the three belief variables accounted for 20.4% of the variability of the proximal variable PBC and control beliefs had a significant influence on teachers' perceived behavioural control ( $t(63) = 3.06, p < .05$ ), *B* .38. All in all, hypothesis 2 was confirmed.

Finally, regression analyses showed that the three distal variables together accounted for certain variabilities in the belief variables but the model could not confirm any significant influence from the distal variables. Therefore, hypothesis 3 was not confirmed. The covariates language taught and type of contract showed no significant influences in any of the above mentioned analyses. Figure 3 shows all significant influences that were found.

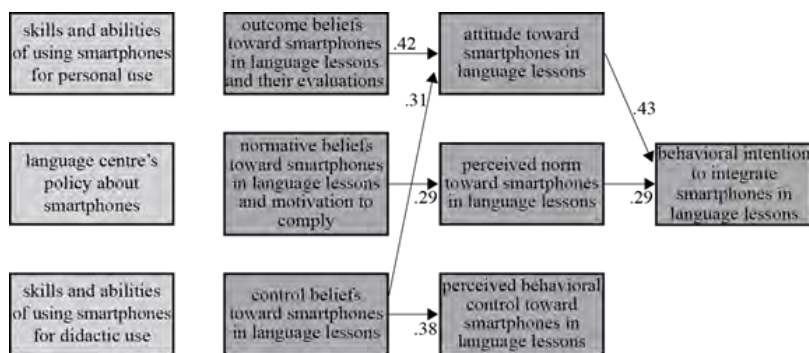


Figure 3. Significant ( $p < .05$ ) results for the whole group.

Following on from the fact that hypothesis 3 could not be confirmed, multiple regression analyses of the distal variables directly on proximal variables were conducted in order to get a better understanding of their suitability for the model. The outcome showed that only

the language centre's policy directly influenced the proximal variable attitude ( $t(26) = 2.78$ ,  $p < .05$ ),  $B .50$ , but these findings concern a small group ( $n = 19$ ). With no other significant influences found, the question was raised if the chosen distal variables were appropriate and if other distal variables might have suited the model better.

The regression analysis testing the influence of proximal variables on behavioural intention was repeated for the subgroup of smartphone owners. Some same results as for the whole group were found, attitude had the strongest influence ( $t(48) = 3.04$ ,  $p < .05$ ),  $B .42$ ). The influence of perceived norm however, was only close to significance ( $p = .59$ ) and PBC significantly influenced intention with ( $t(48) = 1.99$ ,  $p < .05$ ),  $B .24$ . In conclusion, this outcome further confirmed that the role of teachers' perceived capacity and autonomy towards integrating smartphones in their lessons seemed to be stronger and the role of teachers' perceived social pressure seemed weaker for smartphone owners than for all respondents together. Figure 4 shows the significant influences found for smartphone owners.

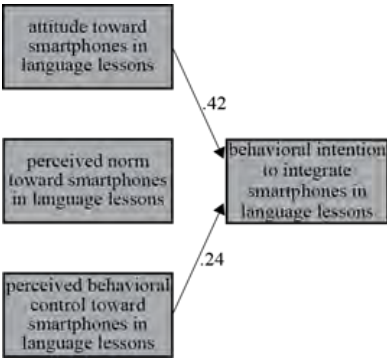


Figure 4. Significant ( $p < .05$ ) results of proximal variables on intention for smartphone owners.

5. Discussion and conclusion

The aim of this study was to identify to which extent certain personal factors influenced teachers' intentions to integrate smartphones in their lessons. Three hypotheses were tested. The first hypothesis, related to the influence of the proximal variables, was only partially confirmed as attitude and perceived norm did influence intention, but perceived behavioural control did not. These results fitted in with other studies using RAA and its predecessors. Attitude having the strongest influence on intention was seen many times before and a significant influence from only two out of the three proximal variables was also seen in previous studies (Admiraal et al., 2013; Kreijns et al., 2013; Lee et al., 2010; Sugar, Crawley, & Fine, 2004; Teo & Lee, 2010).

Interestingly in this study, when the first hypothesis was tested again on the subgroup of smartphone owners, perceived norm no longer had a significant influence but perceived behavioural control did. This finding seemed to imply that when respondents are more familiar with the technology under study, they feel less social pressure regarding the use of it. This is in line with Kreijns and colleagues' (2013) findings that teachers' perceived



knowledge and skills towards technology use negatively influenced their subjective norm towards it. Alternatively this finding could imply that overall, language centres failed to send a clear message regarding their policies, wishes and strategies towards using smartphones in the classroom, leading to a lacking influence of social pressure. This reasoning was partially confirmed by the high number of teachers responding “don’t know” to the question regarding language centre’s policy. It is also in line with for example Sugar and colleagues (2004) who found it worrying that teachers were totally uninfluenced by others in their intentions to integrate technology. Combining the outcome of the hypothesis 1 with the mean scores of the proximal variables leads to other possible indications. The mean score of perceived norm was slightly negative and its influence on intention was significant, indicating that respondents felt little social pressure leading to a weak intention to integrate smartphones. At the same time, the mean score of perceived behaviour control was slightly positive, but had no significant influence on intention, indicating that even if teachers felt they had the capacity and autonomy to integrate smartphones in their lessons, they still did not have the intention to do so. This last aspect raised questions about the extent to which respondents’ answers were consistent and how accurately they reflected reality, beyond the normal concerns playing a role in all studies using self-reported data. Several psychological studies found that people tended to greatly overestimate their own skills, especially when they were lacking knowledge, (Dunning, Johnson, Ehrlinger, & Kruger, 2003). This phenomenon could imply that using RAA to study teachers’ intentions to integrate certain technology would give more reliable results when teachers are familiar with that technology.

The second hypothesis, related to the influence of teachers’ underlying beliefs on proximal variables and indirectly, on their intention to integrate smartphones in their lessons, was confirmed. Fishbein and Ajzens model was thereby confirmed. Meaning that if the intention of teachers use of smartphones should be increased in practice, underlying beliefs could play a key factor in the process of implementation.

The third hypothesis, related to the influence of domain specific background factors on teachers’ behavioural beliefs, was not confirmed. It should be noted that the lack of significant influences of the distal variables may have been due to the small sample size in this study. However, the fact that even when regressed directly on the proximal variables there were hardly any significant influences of the distal variables, may indicate that these specific distal variables did not suit the model.

Even if the results were somewhat limited, RAA seemed a suitable instrument for this study into teachers’ technology use. Comparing aggregated and disaggregated data seemed to illustrate an important aspect of technology integration in an educational context: how different factors not only play a role, but also interact at many levels. Important points for similar studies in the future would be to collect more data and to work with a highly homogeneous sample.

In conclusion, this study showed that the teacher played a crucial role in the decision to integrate smartphones in language lessons. This fits with several previous studies on teachers’ willingness to use technology’ (Mumtaz, 2000). Furthermore, the extent to which respondents were influenced by social pressure or perceived capacity and autonomy to integrate smartphones in their lessons seemed to depend on how familiar they were with these devices. The practical implications of these findings are that language centre administrators who want to stimulate the integration of smartphones in language lessons, should first of all try to influence teachers’ attitudes. However, like Yzer (2012b) 107

pointed out, an intervention would not directly influence people's attitudes, but should try to change people's underlying beliefs. In this case, the responses suggested that focusing on the instrumental aspects of using smartphones may be particularly useful. Potential strategies include showing teachers efficient and effective ways to use smartphones in language lessons. In addition, considering the fact that the distal variable knowledge of using mobile phones for personal purposes showed stronger and more significant correlations with other variables than knowledge of using smartphones for didactic purposes, it seems important to make smartphones available for all teachers, not only for didactic purposes, but especially for personal purposes. This is also in line with a previous study into factors obstructing or stimulating teacher trainers' technology adoption, in which the importance of personal factors and the availability of time and facilities to experiment were pointed out (Drent & Meelissen, 2008). The importance of exploring was in fact also mentioned by one of the respondents who wrote in the comment box at the bottom of the questionnaire "I have noticed that since I have a smartphone, I have discovered more of its possibilities".

A final word regarding interventions to stimulate the use of smartphones is related to Zhao and Frank's (2003) suggestion that schools are in fact ecological systems, where people and technology constantly compete in a 'survival of the fittest'. They suggested taking an *evolutionary* instead of a *revolutionary* approach with regards to technology integration, to which they added that evolution "just happens". Following these ideas, interventions to stimulate the use of smartphones may not be effective if smartphones are simply not compatible with the context or the people in the "system". Zhao and Frank (2003) suggested it would be more effective to let teachers experiment with technology in informal settings, to let them interact with each other and observe role models and let the technological evolution take place in its own time. Translating this recommendation to the practice of language centres means the opposite of implementing technology top down (prescribing teachers what and how to do things). It means creating a friendly environment to experiment with technology. Giving the technology to everybody and start to use it first outside of the classroom (for teacher meetings or other activities), to get to know some possibilities. Broaden the knowledge by constantly showing examples of others, putting good practices on the agenda, excursions to interesting practices and so on. This approach may be hard to sell for administrators who need to justify their course of actions towards technology use in language lessons and want to put measurable goals on policy. However, considering the idea of the school as an ecological system may help with trying to understand the complexity of technology integration in education and may also be reassuring as it suggests that if a certain technology is highly compatible with a certain context, it will find its place one way or another.

## References

- Admiraal, W., Lockhorst, D., Smit, B., & Weijers, S. (2013). The Integrative Model of Behavior Prediction to Explain Technology Use in Post-graduate Teacher Education Programs in the Netherlands. *International Journal of Higher Education*, 2(4), 172–178. doi: 10.5430/ijhe.v2n4p172
- Al-Okaily, R. (2013). Mobile learning and BYOD: implementations in an intensive English program. *Learning and Teaching in Higher Education: Gulf Perspectives*, 10(2).
- Benbasat, I., & Barki, H. (2007). Quo vadis, TAM? *Journal of the Association for Information Systems*, 8(4), 211–218.

- Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. *ReCALL*, 27(1), 4–20.
- Cakir, I. (2015). Opinions and Attitudes of Prospective Teachers for the Use of Mobile Phones in Foreign Language Learning. *Online Submission*, 6(3), 239–255.
- Chambers, A., & Bax, S. (2006). Making CALL work: Towards normalisation. *System*, 34, 465–479.
- Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education*, 59, 1054–1064.
- Chinnery, G. M. (2006). Emerging Technologies, Going to the MALL: Mobile Assisted Language Learning. *Language Learning & Technology*, 10(1), 9–16.
- Drent, M., & Meelissen, M. (2008). Which factors obstruct or stimulate teacher educators to use ICT innovatively? *Computers & Education*, 51(1), 187–199.
- Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why People Fail to Recognize Their Own Incompetence. *Current Directions in Psychological Science*, 12(83).
- Earle, R. (2002). The integration of instructional technology into public education: Promises and challenges. *Educational Technology*, 42, 5–13.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York: Psychology Press.
- Kommers, P. A. M. (2005). *De les begint: mobieltjes aan!* Fontys Lerarenopleiding Sittard: Fontys Hogescholen.
- Kreijns, K., Van Acker, F., Vermeulen, M., & van Buuren, H. (2013). What stimulates teachers to integrate ICT in their pedagogical practices? The use of digital learning materials in education. *Computers in Human Behavior*, 29, 217–225.
- Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21, 157–165. doi: 10.1017/S0958344009000202
- Kurniawan, M. (2018). The Use of Mobile Phone in English Language Lesson: A Shift from Teacher-Centred to Student-Centred through Mobile Learning. In *SHS Web of Conferences* (Vol. 42). EDP Sciences.
- Lee, J., Cerreto, F. A., & Lee, J. (2010). Theory of Planned Behavior and Teachers' Decisions Regarding Use of Educational Technology. *Educational Technology & Society* 13(1), 152–164.
- McFarlane, A., Roche, N., & Triggs, P. (2007). Mobile learning: Research findings, Report to Becta: Becta.
- Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: a review of the literature. *Journal of Information Technology for Teacher Education*, 9(3), 319–342.
- Nalliveettil, G. M., & Alenazi, T. H. K. (2016). The impact of mobile phones on English language learning: Perceptions of EFL undergraduates. *Journal of Language Teaching and Research*, 7(2), 264–272.
- Nielsen, L., & Webb, W. (2011). *Teaching Generation Text: Using cell phones to enhance learning*. San Francisco: Jossey-Bass.
- Norris, C. A., & Soloway, E. (2011). Learning and schooling in the Age of Mobilism. *Educational Technology*, 51(6), 3–10.
- Şad, S. N., & Göktaş, Ö. (2014). Preservice teachers' perceptions about using mobile phones and laptops in education as mobile learning tools. *British Journal of Educational Technology*, 45(4), 606–618.

- Santos, I. M. (2013). Integrating personal mobile devices in teaching: the impact on student learning and institutional support. *Learning and Teaching in Higher Education: Gulf Perspectives*, 10(2).
- Schroeder, A., Minocha, S., & Schneider, C. (2010). The strengths, weaknesses, opportunities and threats of using social software in higher and further education teaching and learning. *Journal of Computer Assisted Learning*(26), 159–174. doi: 10.1111/j.1365-2729.2010.00347.x
- Sharples, M., Arnedillo-Sanchez, I., Milrad, M., & Vavoula, G. (2009). Mobile Learning; Small devices, big issues. In S. Ludvigsen, N. Balacheff, T. de Jong, A. Lazonder & S. Barnes (Eds.), *Technology-enhanced learning: Principles and products*. Dordrecht: Springer.
- Siragusa, L., & Dixon, K. (2009). *Theory of planned behaviour: Higher education students' attitudes towards ICT-based learning interactions*. Paper presented at the ascilite, Auckland.
- Sugar, W., Crawley, F., & Fine, B. (2004). Examining Teachers' Decisions To Adopt New Technology. *Educational Technology & Society*, 7(4), 201–213.
- Teo, T., & Lee, C. B. (2010). Explaining the intention to use technology among student teachers, An application of the Theory of Planned Behavior (TPB). *Campus-Wide Information Systems*, 27(2), 60–67.
- Thornton, P., & Houser, C. (2005). Using mobile phones in English education in Japan *Journal of Computer Assisted Learning*, 21, 217–228.
- Traxler, J. (2010). Students and mobile devices. *Alt-J, Research in Learning Technology*, 18(2), 149–160.
- United Nations Educational Scientific and Cultural Organisation (UNESCO). (2013). Policy guidelines for mobile learning. In R. Kraut (Ed.), *UNESCO Working Paper Series on Mobile Learning*. Paris, France.
- Van Praag, B., & Sanchez, H. S. (2015). Mobile technology in second language classrooms: Insights into its uses, pedagogical implications, and teacher beliefs. *ReCALL*, 27(3), 288–303.
- Wang, M., Shen, R., Novak, D., & Pan, X. (2009). The impact of mobile learning on students' learning behaviours and performance: Report from a large blended classroom. *British Journal of Educational Technology*, 40(4), 673–695. doi: 10.1111/j.1467-8535.2008.00846.x
- Wishart, J. (2008). Challenges faced by modern foreign language teacher trainees in using handheld pocket PCs (Personal Digital Assistants) to support their teaching and learning. *ReCALL*, 20, 348–360. doi: 10.1017/S0958344008000736
- Woodman, K. (2014). Educational paradox: the hidden obstacles to the integration of mobile phones in the language classroom. *Research Papers in Language Teaching and Learning*, 5(1), 110–122.
- Yzer, M. (2012a). Perceived Behavioral Control in Reasoned Action Theory, A Dual-Aspect Interpretation. *The annals of the American academy of political and social science*, 640(1), 101–117.
- Yzer, M. (2012b). The integrative model of behavioral prediction as a tool for designing health messages. In H. Cho (Ed.), *Health Communication Message Design, Theory and Practice* (pp. 21–40): Sage Publications.
- Zhao, Y., & Frank, K. A. (2003). Factors affecting technology uses in schools: An ecological perspective. *American educational research journal*, 40(4), 807–840.

## Appendix

### *English translation of questionnaire "Using smartphones in language lessons"*

#### General questions

1. What is your gender? 0 male 0 female
  
2. Which age category do you belong to?  
0 younger than 25, 0 25-35, 0 36-45, 0 46-55, 0 56-65, 0 older than 65
  
3. Which language(s) do you teach?  
0 English  
0 Dutch as a foreign language  
0 English and Dutch as a foreign language
  
4. Which language centre do you work for? *More than one answer possible*  
☐ Fontys Talencentrum  
☐ HAN – Talencentrum  
☐ Hanze Talencentrum  
☐ HZ Talencentrum  
☐ Radboud in'to Languages  
☐ RUG – Talencentrum  
☐ Saxion – Taalexpert  
☐ Tilburg University – Language Center  
☐ TU Delft – ITAV  
☐ TU Eindhoven – CLIC  
☐ Universiteit Leiden – Academisch Talencentrum  
☐ Universiteit Maastricht – Talencentrum  
☐ Universiteit Twente – TaalCoördinatiePunt  
☐ UvA – INTT  
☐ VU – Taalcentrum-VU  
☐ Wageningen in'to Languages
  
5. Which type of contract do you have with this/these language centre(s)?  
0 permanent contract, 0 fixed term contract, 0 freelance basis
  
6. How many hours per week do you work as a language teacher on average?  
*Freelance teachers please give the number of hours with all employers including preparation time*  
0 less than 20 hours per week  
0 20-36 hours per week  
0 more than 36 hours per week

#### Introduction

More and more language teachers are taking advantage of the fact that students own a mobile phone.

According to experts, mobile technology used in an integrative way, can increase the **111**

effectiveness of certain activities in language lessons. There are for example voting and response programs for smartphones with which a whole class can respond to a discussion point or with which a teacher can measure students' knowledge and understanding through short quizzes. Also, smartphones can be used to access social media like blogs and Twitter, which can positively contribute to collaborative learning. Finally, there are various ways in which smartphones can help with repetitive tasks such as vocabulary learning. This questionnaire is part of a study that focusses on the question why some language teachers use smartphones in an integrative way in their lessons and others don't. There are no right or wrong answers - the investigator is interested in your personal opinion about using smartphones in your own lessons in an integrative way. Thank you for taking part in this study.

### Instruction

The questionnaire consists of multiple choice questions, check box questions and questions using a seven point scale. For these seven point scales you will be asked to click the number that best describes your opinion. Numbers 1 and 7 indicate the most extreme opinions, number 4 indicates you agree with neither one answer nor the other, and the other numbers are in between. Some questions and answer scales are very similar, but differ in small details; it is therefore important to carefully read the questions before clicking the answer that best describes your opinion. The questionnaire starts on the next page.

7. Do you own a mobile phone?  
0 yes, 0 no (continue to question 13)
8. Which type of phone have you got?  
0 smartphone, 0 non-smartphone
9. What do you use your phone for? *Check all applicable boxes*
  - ☐ making phone calls/sending messages
  - ☐ reading/sending email
  - ☐ Skype/Facetime
  - ☐ social media
  - ☐ using websites
  - ☐ following the news
  - ☐ reading books/magazines
  - ☐ reading documents
  - ☐ using maps
  - ☐ using the alarm clock/stopwatch
  - ☐ making notes
  - ☐ taking pictures
  - ☐ making videos
  - ☐ listening to music/podcasts
  - ☐ watching TV/videos
  - ☐ playing games
  - ☐ using free apps
  - ☐ using paid apps
  - ☐ Other: .....

10. How many times per day do you use your mobile phone on work days? .....  
*The exact number is not important, please give an indication.*

11. How many times per day do you use your mobile phone on days off? .....  
*The exact number is not important, please give an indication.*

12. To what extent do you find it important to have your mobile phone with you every moment of the day? *very important 1-2-3-4-5-6-7 totally unimportant*

N.B. freelance teachers who work for more than one educational institute: for ALL following questions, please answer for the institute you work the largest number of hours with.

13. What kind of policy towards using smartphones in the classroom does the language centre where you work have?

- ☐ very positive policy (*continue to question 15*)
- ☐ slightly positive policy (*continue to question 15*)
- ☐ slightly negative policy (*continue to question 15*)
- ☐ smartphones are banned in the classroom
- ☐ don't know (*continue to question 15*)

14. Are you prepared to use smartphones in the classroom despite this ban?

- ☐ yes (*continue to question 17*)
- ☐ no (*continue to question 64*)

15. To what extent do you think it is important that your lessons fit in with the language centre's policies? *very important 1-2-3-4-5-6-7 totally unimportant*

16. Which of the following is offered through the language centre you work for?

*Check all applicable boxes*

- ☐ information about didactic applications of smartphones
- ☐ training regarding the use of smartphones in the classroom
- ☐ a code of conduct regarding the use of smartphones in the classroom
- ☐ technological support for the use of smartphones in the classroom
- ☐ as far as I know, none of the above is offered

17. How experienced are you in using smartphones for personal purposes?

- ☐ don't know anything about it (*continue to question 25*)
- ☐ exploring user (starter)
- ☐ beginning user
- ☐ somewhat experienced user
- ☐ experienced user
- ☐ advanced user
- ☐ very advanced user (expert)

18. How experienced are you in using smartphones for didactic purposes?

- ☐ don't know anything about it (*continue to question 25*)
- ☐ exploring user (starter)

- 0 beginning user
  - 0 somewhat experienced user
  - 0 experienced user
  - 0 advanced user
  - 0 very advanced user (expert)
19. To what extent are you familiar with voting and response programs for smartphones?
- 0 familiar
  - 0 somewhat familiar
  - 0 heard of them (*continue to question 21*)
  - 0 never heard of them (*continue to question 21*)
20. How often do you use voting and response programs for smartphones?
- every time the opportunity arises 1-2-3-4-5-6-7 never*
21. To what extent are you familiar with social media for smartphones?
- 0 family
  - 0 somewhat familiar
  - 0 heard of them (*continue to question 23*)
  - 0 never heard of them (*continue to question 23*)
22. How often do you use social media for smartphones?
- every time the opportunity arises 1-2-3-4-5-6-7 never*
23. To what extent are you familiar with smartphone apps for vocabulary learning?
- 0 familiar
  - 0 somewhat familiar
  - 0 heard of them (*continue to question 25*)
  - 0 never heard of them (*continue to question 25*)
24. How often do you use smartphone apps for vocabulary learning?
- every time the opportunity arises 1-2-3-4-5-6-7 never*

Many of the following questions are about “using smartphones in the classroom in an integrative way”. With “in an integrative way” the investigator means that smartphones are considered a constant part of the learning and classroom situation, just like for example books, audio materials and the interactive whiteboard are at the moment and that they are used to increase the effectiveness of existing learning activities.

25. If I use smartphones in my lessons in an integrative way, more students will take part in discussions. *very probable 1-2-3-4-5-6-7 very improbable*

26. If I use smartphones in my lessons in an integrative way, I can easily get insight into the level of students’ knowledge and understanding. *very probable 1-2-3-4-5-6-7 very improbable*

27. If I use smartphones in my lessons in an integrative way, it will positively contribute to collaborative learning. *very probable 1-2-3-4-5-6-7 very improbable*



28. If I use smartphones in my lessons in an integrative way it will help students with learning new vocabulary. *very probable 1-2-3-4-5-6-7 very improbable*
29. To what extent do you think it's important that all students participate in discussions? *very important 1-2-3-4-5-6-7 totally unimportant*
30. To what extent do you think it's important to know the level of students' knowledge and understanding? *very important 1-2-3-4-5-6-7 totally unimportant*
31. To what extent do you think collaborative learning is important? *very important 1-2-3-4-5-6-7 totally unimportant*
32. To what extent do you think it's important that students learn new vocabulary? *very important 1-2-3-4-5-6-7 totally unimportant*
33. My friends think that I should use smartphones in an integrative way in my lessons. *very probable 1-2-3-4-5-6-7 very improbable*
34. My colleagues think that I should use smartphones in an integrative way in my lessons. *very probable 1-2-3-4-5-6-7 very improbable*
35. My superiors think that I should use smartphones in an integrative way in my lessons. *very probable 1-2-3-4-5-6-7 very improbable*
36. My students think that I should use smartphones in an integrative way in my lessons. *very probable 1-2-3-4-5-6-7 very improbable*
37. When it comes to my teaching, I want to do what my friends think I should do. *totally agree 1-2-3-4-5-6-7 totally disagree*
38. When it comes to my teaching, I want to do what my colleagues think I should do. *totally agree 1-2-3-4-5-6-7 totally disagree*
39. When it comes to my teaching, I want to do what my superiors think I should do. *totally agree 1-2-3-4-5-6-7 totally disagree*
40. When it comes to my teaching, I want to do what my students think I should do. *totally agree 1-2-3-4-5-6-7 totally disagree*
41. When it comes to teaching, to what extent do you want to be like your colleagues? *very much 1-2-3-4-5-6-7 not at all*
42. My colleagues from the language centre use smartphones in their lessons in an integrative way. *totally true 1-2-3-4-5-6-7 totally untrue*
43. My colleagues from other departments of the university use smartphones in their lessons in an integrative way. *totally true 1-2-3-4-5-6-7 totally untrue*

44. Colleagues from other universities use smartphones in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
45. Even if the language centre does not offer information about didactic applications of smartphones, I can use smartphones in my lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
46. Even if I have not had any specific training, I can use smartphones in my lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
47. Even if the language centre does not have a code of conduct for the use of smartphones in the classroom, I can use smartphones in my lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
48. Even if the language centre does not offer any technological support, I can use smartphones in my lessons in an integrative way. *totally agree 1-2-3-4-5-6-7 totally disagree*
49. Even if not all my students own a smartphone, I can use smartphones in my lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
50. Using smartphones in my lessons in an integrative way is *good 1-2-3-4-5-6-7 bad*
51. Using smartphones in my lessons in an integrative way is *necessary 1-2-3-4-5-6-7 unnecessary*
52. Using smartphones in my lessons in an integrative way is *interesting 1-2-3-4-5-6-7 boring*
53. Using smartphones in my lessons in an integrative way is *desirable 1-2-3-4-5-6-7 undesirable*
54. Most people who are important to me think that I should use smartphones in my lessons in an integrative way. *totally true 1-2-3-4-5-6-7 totally untrue*
55. Most people whose opinion matters to me, would approve if I used smartphones in my lessons in an integrative way. *totally true 1-2-3-4-5-6-7 totally untrue*
56. People like me use smartphones in their lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
57. Whether I use smartphones in my lessons in an integrative way is totally up to me.  
*totally agree 1-2-3-4-5-6-7 totally disagree*
58. If I really want to, I can use smartphones in my lessons in an integrative way.  
*very probable 1-2-3-4-5-6-7 very improbable*

59. I have control over using smartphones in my lessons in an integrative way.  
*totally agree 1-2-3-4-5-6-7 totally disagree*

60. I am already using smartphones in my lessons in an integrative way.  
*0 yes (continue to question 64) 0 no*

61. I want to use smartphones in my lessons in an integrative way before the end of 2014.  
*totally true 1-2-3-4-5-6-7 totally untrue*

62. I have the intention to use smartphones in my lessons in an integrative way before the end of 2014.  
*definitely 1-2-3-4-5-6-7 definitely not*

63. I am going to use smartphones in my lessons in an integrative way before the end of 2014.  
*very probable 1-2-3-4-5-6-7 very improbable*

This is the end of the questionnaire. Do not forget to click send in order to submit your answers.

64. Space for questions or comments.

.....