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ORIGINAL RESEARCH ARTICLE

Are teachers ready to immerse? Acceptance of mobile immersive virtual reality in secondary education teachers

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The increasing mainstream adoption of immersive virtual reality (iVR) in education has triggered research about key variables explaining acceptance of iVR by teachers. In this study we adopted the UTAUT2 acceptance model as a theoretical framework enriched with the variable personal innovativeness. 379 Flemish secondary education teachers watched a video about iVR learning experiences, after which an online survey concerning their perceptions was administered. General linear modeling was performed to test the hypotheses. Results indicate performance expectancy, social influence, facilitating conditions, hedonic motivation and personal innovativeness to be significantly associated with behavioural intention to use. No moderating effect of age, gender or experience was observed. The results account for 54% of the variance in behavioural intention to use. The findings help to understand which factors are key in the acceptance of mobile iVR by secondary education teachers and might help defining successful iVR implementation strategies.

Keywords: mobile immersive virtual reality; secondary education; acceptance; UTAUT2; personal innovativeness; perceptions

Introduction

Immersive virtual reality (iVR) has become popular, with millions of virtual reality headsets (head-mounted displays, HMDs) sold and over 16 million users (Alsop 2022). This iVR rise is often attributed to improved usability and affordability (Bower, De Witt, and Lai 2020). Within iVR two types of HMDs can be discerned: mobile and tethered devices. Mobile iVR headsets are so-called standalone devices that generate the iVR content via a built-in smartphone. Tethered devices on the other hand need a PC or laptop to push the content to the iVR headset, using a cable or wireless streaming. Following teachers' concerns about mobility of iVR technology (Boel *et al*. 2021b; Fransson, Holmberg, and Westelius 2020) this study will focus on teachers' perceptions of mobile iVR solely.

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Background literature on virtual reality in education

Following the technological advancements of iVR headsets, iVR has also caught the attention of the educational sector, which is also reflected in the European Horizon programme on eXtended Reality Learning (European Commission 2021). Half a decade of educational research about iVR points at affordances to K–12 education fostering spatial knowledge representation, experiential learning, transfer of knowledge and students' intrinsic motivation and engagement (Di Natale *et al*. 2020) but also for the development of critical thinking and problem-solving skills, communication skills and collaborative learning (Maas and Hughes 2020). A recent meta-analysis study of iVR research points at the positive impact on cognitive learning outcomes, especially for K–12 learners in science education and for rich learning experiences resulting from simulations or virtual world representations (Wu, Yu, and Gu 2020). However, several challenges are reported in terms of ethical concerns, lack of integration in existing curricula and educational organisation constraints (Fransson, Holmberg, and Westelius 2020; Southgate *et al*. 2019) and the lack of instructional design principles for iVR educational applications (Boel *et al*. 2021a). Recent technological advancements push the adoption of mobile iVR systems such as Meta Quest, Pico Neo and others. These systems challenge available research evidence due to emerging new affordances, such as being standalone and mobile, potentially offering additional educational gains.

Research on acceptance of iVR technology

As stated by Venkatesh, Thong, and Xu (2012, p. 157) research on 'individual acceptance and use of information technology is one of the most mature streams of information systems research'. To understand how teachers could integrate iVR technology in their classroom, it is essential to examine which factors influence their acceptance (Alfalah 2018). Hussin, Jaafar, and Downe (2011) investigated the acceptance of desktop virtual reality by 41 college teachers. Effort expectancy proved to be the single significant factor predicting behavioural intention to use. Chen, Shih, and Yu (2012) found that playfulness is more significant than perceived usefulness or perceived ease of use. The study by Alfalah (2018) on the acceptance of VR by 30 higher education faculty members, pointed at a need for pedagogical training, to increase awareness within the faculty, to reduce administrative support and to support collaboration between faculty members. The study by Jang *et al*. (2021) investigated teachers' acceptance of augmented and virtual reality by 292 teachers adopting the TAM-model extended with T-Pack variables. All factors in their model proved to be of significance and made clear professional development of and support for teachers is essential in the acceptance. The need for professional development initiatives was confirmed in the recent study by Mystakidis and Christopoulos (2022) looking at 41 K–12 teachers' perceptions of iVR escape rooms for STEM education. A large-scale survey study of 20 876 Russian teachers (Khukalenko *et al*. 2022) showed educators consider iVR a valuable educational tool, provided they are supported by IT personnel, when it does not take considerable extra effort to learn how to operate iVR devices or to plan iVR learning activities.

The above studies adopted different acceptance models, ranging from TAM (Davis 1989) over Unified Theory of Acceptance and Use of Technology (UTAUT) (e.g. Hussin, Jaafar, and Downe 2011) to self-generated models (e.g. Alfalah 2018;

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Khukalenko *et al*. 2022). However, nearly all identified factors predicting iVR acceptance by teachers can be synthetised into the factors of the UTAUT acceptance model (Venkatesh *et al*. 2003) related to behavioural intention to use, namely performance expectancy, effort expectancy, social influence, facilitating conditions adding hedonic motivation from UTAUT2 (Venkatesh, Thong, and Xu 2012). This is also in line with our prior qualitative, exploratory study using UTAUT2 to investigate which factors contribute to the acceptance of mobile iVR by secondary education teachers (Boel *et al*. 2021b). We will now discuss the factors of UTAUT2 in greater detail. For a comprehensive review of UTAUT2 refer to Venkatesh, Thong, and Xu (2016).

Performance expectancy refers to the extent to which a person believes the technology improves working conditions. This factor seems significantly associated with behavioural intention to use iVR (Boel *et al*. 2021b; Bower, De Witt, and Lai 2020; Khukalenko *et al*. 2022; Sagnier *et al*. 2020; Shen *et al*. 2019). Effort expectancy is the extent to which a person thinks efforts are needed to use a technology. Teachers must learn to operate iVR, to integrate this into their curriculum and so on. Previous exploratory research (Boel *et al*. 2021b; Pletz 2021) proved this to be of major concern in teachers and instructors. Social influence refers to the extent someone feels influenced by others. 'Others' can be colleagues or persons valued by teachers, such as teacher-experts, trainers, IT-staff and principals. Available iVR research points to the significant association with behavioural intention to use (Bower, De Witt, and Lai 2020; Jang *et al*. 2021; Shen *et al*. 2019). Facilitating conditions comprise a person's feeling of being supported in his or her technology use. It refers to organisational, instrumental and infrastructural support. Facilitating conditions has proven to be a key factor predicting behavioural intention to use of teachers in general (Pynoo *et al*. 2011) and for iVR more specifically (Boel *et al*. 2021b; Bower, De Witt, and Lai 2020; Bracq *et al*. 2019; Khukalenko *et al*. 2022; Pletz 2021; Shen *et al*. 2019). Resulting from these findings, we hypothesised:

H1. Performance expectancy is significantly associated with behavioural intention to use.
H2. Effort expectancy is significantly associated with behavioural intention to use.
H3. Social influence is significantly associated with behavioural intention to use.
H4. Facilitating conditions is significantly associated with behavioural intention to use.

Whereas UTAUT focuses on technology acceptance and use from the perspective of an organisation, UTAUT2 rather aims at individual level variables (see e.g. Tamilmani, Rana, and Dwivedi 2021). This fits the present study because iVR is yet not adopted as a general educational tool in schools. Therefore, we considered the three factors of habit, price value and hedonic motivation. Habit reflects prior experiences and refers to the extent to which teachers already adopt technology in their courses (Venkatesh, Thong, and Xu 2012). As we expected teachers do not yet integrate iVR technology in their courses at a level which would fit the construct of habit, we chose not to add this factor to our research model. Although price value is another significant factor in predicting behavioural intention to use (Venkatesh, Thong, and Xu 2012), our prior research (Boel *et al*. 2021b) proved price value not to come into play as in general teachers are less concerned with expenses, compared to principals and IT-staff. Therefore, price value was not included in this study. Hedonic motivation is defined as the enjoyment of the information system by the user (Van der Heijden 2004). The pleasure

arising from an iVR experience is one of the main attraction elements to iVR (Bracq *et al*. 2019; Bower, De Witt, and Lai 2020; Chen, Shih, and Yu 2012; Makransky, Terkildsen, and Mayer 2019; Yang and Han 2020). These findings led to this hypothesis:

H5. Hedonic motivation is significantly associated with behavioural intention to use.

Our prior exploratory study (Boel *et al*. 2021b) proved the UTAUT2 framework to be useful, but also pointed at shortcomings. Interview data from nearly all interviewees revealed the need to consider personal innovativeness in the domain of information technology (personal innovativeness [PI]). This was underpinned by other qualitative research on iVR in professional training settings by Pletz (2021). Agarwal and Prasad (1998) defined personal innovativeness as 'the willingness of an individual to try out new information technology' (p. 206). Personal innovativeness has proven to have a significant effect on intention to use (Amid and Din 2021; Blut *et al*. 2021; Cao *et al*. 2019; Fagan, Kilmon, and Pandey 2012; Sagnier *et al*. 2020; Zhao *et al*. 2021). Based on these findings, we therefore enrich the model with the factor of personal innovativeness, adding this hypothesis:

H6. Personal innovativeness is significantly associated with behavioural intention to use.

The original UTAUT model put forward four moderators: age, gender, experience, and voluntariness of use. In UTAUT2, due to its focus on individual consumers, voluntariness of use is redundant. This is also the case in the present study since it is at this moment up to the individual teacher to adopt this technology and not yet a school based or policy choice. This led to these hypotheses:

H7a. Age and gender moderate the association between facilitating conditions and behavioural intention to use.
H7b. Age, gender and experience moderate the association between hedonic motivation and behavioural intention to use.
H7c. Age, gender and experience moderate the association between personal innovativeness and behavioural intention to use.

As stated before, we expected mobile iVR technology is not yet integrated in most teachers' educational practice. Therefore, we limited the construct of acceptance to the factor of behavioural intention to use leaving out Use as a dependent variable in this study.

Pulling together available iVR research resulted in a further development of the model in view of the present study as depicted in Figure 1.

Methodology

Participants and data collection

The present study was set up considering Covid-19 restrictions. This challenged both the sampling and the presentation of an iVR experience. Consequently, the study was moved completely online. Participants were recruited via social media, a specialist educational e-zine in Flanders, local educational technology organisations and

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networks of the researchers. In total, 505 teachers from 26 schools responded to the call for participation. After data cleaning, 379 complete responses remained, with input to be dropped from 126 teachers due to non-completion of the full research procedure. At the start of the procedure, active informed consent was obtained and only data from consenting participants were included in subsequent analyses. Table 1 summarises information about participant profiles.

Measures

The entire study was moved online, using Qualtrics. The survey started with the collection of demographic data of age, gender and school. Prior experience with iVR was measured using a 7-point Likert scale ('no experience' to 'extensive experience'). Before moving to survey items addressing their mobile iVR perceptions,

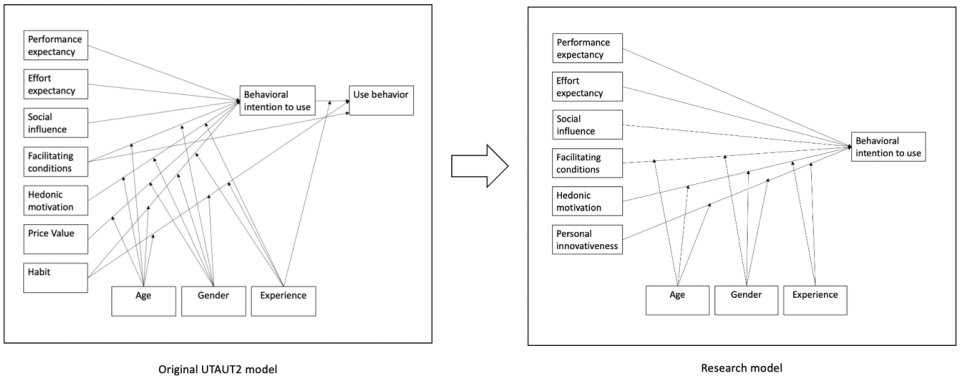

Figure 1. Model diagram of study on behavioural intention to use of iVR by secondary education teachers in Flanders.

Table 1. Demographic overview of participants.

Variable	Value	Frequency	%
Gender	Male	144	38.0
	Female	235	62.0
Age	Under 25	9	2.4
	25–34	73	19.3
	35–44	130	34.3
	45–54	116	30.6
	Over 54	51	13.5
Experience with iVR	No experience	168	44.3
	Very little experience	102	26.9
	Little experience	57	15.0
	Some experience	25	6.6
	Moderate experience	22	5.8
	A lot of experience	2	0.5
	Extensive experience	3	0.8

participants first viewed a tailor-made YouTube-video. Research stresses that expectations about technology cannot be assessed properly when respondents have no or little experience (Hussin, Jaafar, and Downe 2011). COVID-regulations however did not allow for teachers to experience iVR at first-hand. These restrictions were managed by presenting teachers with a video addressing the technology tools and the educational affordances of iVR. This mirrors approaches from earlier research (see e.g. Shen *et al*. 2019). The video showed an iVR user in an empty play area of 3 by 3 meter, putting on a mobile iVR headset, taking the controllers and starting the iVR experience. This helped teachers in understanding the set-up required for mobile iVR in a classroom. Next, 20 examples of educational iVR experiences were shown, with a voice-over of one of the researchers explaining the aims and design of the experiences. The video fragments aimed to familiarise the teachers with the possible affordances of iVR for educational purposes. The examples covered 10 different course subjects, such as foreign language learning, chemistry, mathematics, assembly training, artistry and so on (Figure 2).

Duration of the video was 4 min 39 s. Research participants could not skip the video before tackling the next part of the survey: their perceptions about mobile iVR as a teaching aid in their classes. To tap into these perceptions, all survey items from the original UTAUT were used (Venkatesh *et al*. 2003), adding three items (n = 3) for hedonic motivation (Venkatesh, Thong, and Xu 2012) and four items (n = 4) for personal innovativeness (Agarwal and Karahanna 2000). These 27 items had to be rated on a 7-point Likert scale, ranging from 1 ('Completely disagree') to 7 ('Completely agree'). All items were randomly presented to the respondents. Full overview of items can be found in the supplementary materials.

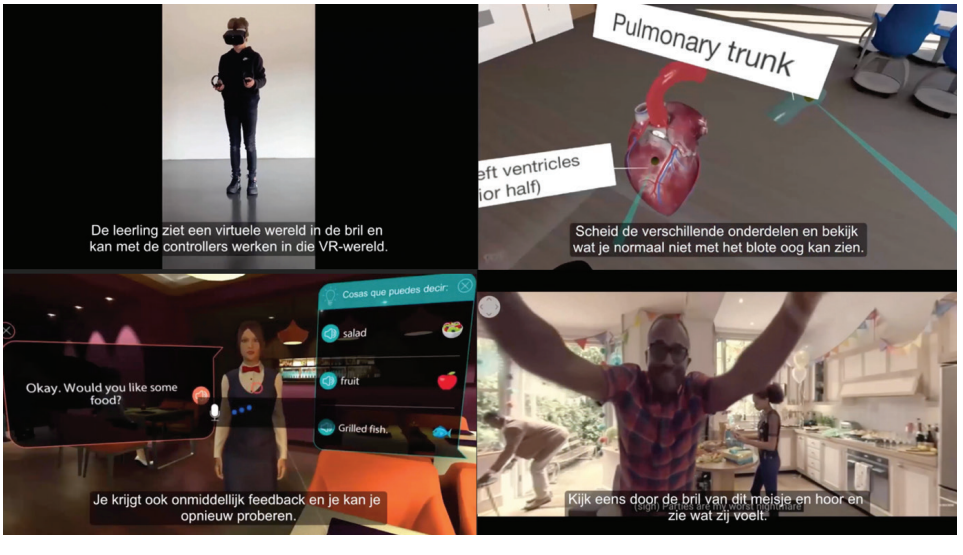

Figure 2. Screenshots of the video used to show the participants the affordances of iVR for educational purposes.

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Results

Descriptive analysis

Analysis of the data was performed using SPSS28 (IBM). First, unidimensionality of the measurement instrument was tested using exploratory factor analysis. For performance expectancy one item ('Using iVR will strengthen my position') was below the threshold of 0.50 and was deleted from the instrument. As iVR is not yet introduced at the organisational level of schools, teachers probably did not distinguish between their personal perception and the perspective at the school level.

All scale items related to effort expectancy reflect satisfactory factor loadings. Analysis of the items measuring social influence resulted in distinguishing between two distinct factors: social influence at a personal level ('people who influence my behavior', 'people who are important to me' and 'people whose opinions I value') and social influence at an organisational level ('the school supports use of iVR' and 'in general, the school stimulates the use of iVR'). Nonetheless, we returned to the original theoretical construct as put forward by Venkatesh, Thong, and Xu (2012).

Concerning the remaining factor analyses, all items reflected high specific factor loadings for the constructs of hedonic motivation, personal innovativeness and behavioural intention to use (>0.50; standardised factor loading). One item was removed due to a too low loading: 'iVR is not compatible with other technologies which I use' in the construct of facilitating conditions. Results of the individual item loadings can be found in the supplementary materials.

Next, a reliability analysis was carried out by calculating Cronbach's alpha. Table 2 summarises the results, including the means (M) and standard deviation (SD). All mirror good to very good reliability, except for facilitating conditions reflecting moderate reliability.

Last, to account for possible contextual effects, such as school characteristics, we calculated the intra-class correlation coefficient (ICC) for average measures for behavioural intention to use. Based on an absolute-agreement, 2-way mixed-effects model, ICC was 0.220. To address this heteroscedasticity, we used robust standard errors for the regression models.

Hypothesis testing

In view of hypothesis testing, general linear modeling was applied. First, main effects between predictors and dependent variables were analyzed. The next stage involved the interaction effects of gender, age and experience with iVR. Results are summarised in Table 3.

Table 2. Results of reliability analysis.

Constructs	Cronbach's α	Means	SD
Performance expectancy	0.90	4.79	1.36
Effort expectancy	0.86	4.71	1.27
Social Influence	0.86	3.44	1.55
Facilitating conditions	0.63	3.04	1.68
Hedonic motivation	0.81	4.96	1.18
Personal innovativeness	0.85	4.59	1.49
Behavioural intention to use	0.96	3.39	1.70

Table 3. Results of the cluster-robust regression models with behavioural intention to use as the dependent variable.

	Direct effects only	Direct effects and interactions
	Parameter estimates	Parameter estimates
Performance expectancy (PE)	0.161*	0.162*
Effort expectancy (EE)	-0.055	
Social influence (SI)	0.389**	0.390**
Facilitating conditions (FC)	0.288**	0.244**
Hedonic motivation (HM)	0.159*	0.159
Personal Innovativeness (PI)	0.350**	0.324**
Age	0.002	
Gender	Male: -0.018[a]	
Experience	0.071	
R^2	**0.535**	
FC × Age		-0.003
FC × Gender		Male: 0.095
HM × Age		0.000
HM × Gender		Male: 0.018
HM × Experience		0.002
PI × Age		0.001
PI × Gender		Male: 0.075[a]
PI × Experience		0.047
R^2		**0.541**

[a] To test interaction with gender, female is used as a comparison base with value 0.
*$p < 0.05$; ** $p < 0.001$.

Looking at the main effects, significant associations are observed between behavioural intention to use and the factors performance expectancy, social influence, facilitating conditions, hedonic motivation and personal innovativeness. Association with effort expectancy proved not being significant.

Looking at the interaction effects of gender (female as comparison base), age and experience with iVR, none were significant.

These results imply that performance expectancy is significantly associated with behavioural intention to use, so H1 was confirmed, as was H3 concerning social influence, H4 for facilitating conditions, H5 for hedonic motivation and H6 for personal innovativeness. Effort expectancy proved not to be significant, rejecting H2.

The proportion of explained variance in behavioural intention to use by the direct and indirect effects in the research model was respectively 53.5% and 54.1%. Model comparison between main effects only and adding interaction effects proved not to be significant: $F(8, 361) = 0.6154$; $p = 0.765$.

Discussion

The aim of our study was to identify which factors contribute to the behavioural intention to use mobile iVR by secondary education teachers in Flanders, Belgium. We adopted the UTAUT2-model (Venkatesh, Thong, and Xu 2012) as a theoretical framework, and added personal innovativeness in the domain of information technology (Agarwal and Prasad 1998), based on prior exploratory research (Boel *et al.*

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2021b; Pletz 2021). Results of general linear model tests were successful in explaining 54% of the variance in behavioural intention to use. In this paragraph, we discuss the results by looking for explanations and future research directions.

Results show that performance expectancy is significantly associated with behavioural intention to use. Teachers seem to expect educational benefits of mobile iVR for their own teaching. This is in line with previous research indicating the significance of performance expectancy (e.g. Fagan, Kilmon, and Pandey 2012; Jang *et al*. 2021; Mystakidis and Christopoulos 2022; Sagnier *et al*. 2020; Shen *et al*. 2019). Even though we were not able to immerse the participants in an actual iVR learning experience, due to Covid-19 regulations, teachers nonetheless expect iVR could enhance their teaching practice. Fit between educational affordances or technologies and the personal preferences of teachers seem critical to induce acceptance in teachers (e.g. Mumtaz 2000). Future research could investigate which of these affordances especially promoted teacher acceptance and how this is related to the currently available technological pedagogical content knowledge (Abbitt 2011).

Tamilmani, Rana, and Dwivedi (2021) found that effort expectancy was only a minor significant factor in the model. Therefore, it was not a surprise to see that effort expectancy is not significantly associated with behavioural intention to use and is negatively correlated with it. Teachers apparently are not significantly concerned with how many efforts it would take to use iVR in their classes. This confirms earlier findings (Bracq *et al*. 2019; Sagnier *et al*. 2020). However, effort expectancy or the related construct of ease of use (TAM) did prove to be of significance in predicting behavioural intention to use in other VR acceptance studies (Bower, De Witt, and Lai 2020; Fagan, Kilmon, and Pandey 2012; Shen *et al*. 2019) and in the original UTAUT2 framework (Venkatesh, Thong, and Xu 2012). Probably, and as expressed by Pletz (2021), the lack of exposure to an actual iVR learning experience and the lack of prior experience with it can explain for these contradictory results. When having no actual experience with iVR it is difficult to estimate the actual efforts needed. This was also explained by our own prior exploratory research (Boel *et al*. 2021b): when teachers are engaged with an actual iVR learning application, they experience iVR is not as difficult as they had expected.

Social influence seems to be the most important factor in predicting intention to use. This is in line with other research (Bower, De Witt, and Lai 2020; Jang *et al*. 2021; Shen *et al*. 2019). This result can also be linked to the findings of prior qualitative, exploratory research (Boel *et al*. 2021b; Pletz 2021), in that iVR use is at this moment not organised at a school level, leaving it to the personal initiative of the teacher. However, most interviewees in those studies expressed that teachers would integrate iVR in their courses when they experienced influence mainly from the principal, but also from teacher-colleagues. Acceptance of educational technology seemingly cannot be restricted to the personal choice of a teacher given the conditions to implement and integrate technologies at the school level scale. This was already stressed in relation to the adoption of mobile technologies in schools (e.g. Leem and Sung 2019) and reflected in school readiness and teacher readiness studies for educational technology integration (e.g. Petko, Prasse, and Cantieni 2018). The school level factors go beyond access, support and technological support. This level also introduces the importance of shared beliefs and expertise (Chien, Wu, and Wu 2018; Howard, Chan, and Caputi 2015).

Teachers expect mobile iVR can be beneficial for their teaching, but they clearly indicate the need for support. This adds to other research on iVR learning acceptance

using UTAUT (Bower, De Witt, and Lai 2020; Bracq *et al*. 2019; Shen *et al*. 2019). When adopting a new technology such as mobile iVR, users need to feel themselves supported in implementing this technology. Specifically for iVR, teachers ask for both technical, practical and pedagogical support (Boel *et al*. 2021b). This finding reintroduces the importance to consider in future research the school level when studying acceptance because educational technology is mostly supported at the school level (Niederhauser *et al*. 2018).

Although the participants were not involved in an actual iVR learning experience, they indicate the pleasure of it to be significantly associated with their intention to use. This builds on the earlier findings by Bower, De Witt, and Lai (2020), Bracq *et al*. (2019) and Mystakidis and Christopoulos (2022).

We added personal innovativeness as a new predicting factor in our model. This proved to be a valid assumption, as it is significantly associated with behavioural intention to use. Prior exploratory research (Boel *et al*. 2021b; Pletz 2021) found personal innovativeness to be of importance in the adoption and use of iVR technology by teachers. This is now being confirmed in this study. The results also confirm the findings from previous quantitative research (Fagan, Kilmon, and Pandey 2012). But care must be taken with this conclusion. Research by George, Schwuchow, and Hussmann (2019) suggests that innovativeness plays a role but should be linked to perceived usefulness.

None of the moderators seemed to exert a significant effect. Looking at gender, this fits the recurrent finding that gender is rather inconsistently associated with acceptance in studies. Gender as a moderator can also be criticised and seen as a confounding variable: is it gender as such that plays a role or is it the gender role or gendered content of the educational technology that plays a role (e.g. Iachini *et al*. 2016). The non-significant role of age can be explained by the overall lack of experience with iVR in all age groups, although research suggests that older respondents might be more willing due to a longer lasting fascination with the potential of new technologies (e.g. George, Schwuchow, and Hussmann 2019). Experience proved not to play a significantly moderating role. Probably the very skewed results towards no or little experience can explain this. It is however in contrast with UTAUT2 (Venkatesh, Thong, and Xu 2012) and the findings of Bracq *et al*. (2019). We believe therefore real life and first-hand experiences are critical to develop an experiential base to guide potential acceptance and adoption of technologies. This also calls for ecological valid research designs to study the current research question.

Even though we were successful in explaining 54% of the variance for behavioural intention to use, there are some limitations in our study. First, due to Covid-19 sanitary regulations, participants could not be immersed into an actual mobile iVR learning experience. This is endorsed by Shen *et al*. (2019) stating that 'future studies should evaluate real VR HMD experiences to yield comprehensive findings'. Second, the UTAUT2 remains somewhat limited as it makes abstraction of the unique features of iVR technology, such as immersion, presence, motion sickness and so on (Southgate *et al*. 2019). The Multi-Level Framework of Technology Acceptance and Use (MLF, Venkatesh, Thong, and Xu 2016) could be adopted in future iVR studies in education (Mütterlein and Hess 2017). Third, the UTAUT model in origin is designed to test acceptance over a longer period of time. This was not feasible since adoption is still very low, and only few teachers have access to iVR headsets in their schools to be used over a longer time span in different courses. Future research should try to incorporate this longer-term perspective as to identify which factors in the acceptance

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alter over time and what causes this evolution. A follow-up study with the same participants could address this gap. A key limitation was uncovered when discussing the results about the impact of social influence. The UTAUT2 focuses strongly on the individual, whereas teachers function in and are dependent on the social context of their school. This already led to the suggestion to adopt richer models that respect the multilevel structure of factors that influence technology acceptance, such as MLF (Venkatesh, Thong, and Xu 2016). Lastly, this study focused on mobile iVR acceptance by secondary education teachers in Flanders. Findings should be extended to other teachers with caution, as technology acceptance studies are often limited to the specific research context (Mütterlein and Hess 2017).

Conclusion

This study tried to identify which factors contribute to the acceptance of mobile iVR by secondary education teachers in Flanders. Analysis of our results accounted for 54% of the variance for behavioural intention to use. No moderators seemed to play a significant role. We used the UTAUT2 model as a theoretical framework enriched with the factor personal innovativeness. This updated model proved valuable to explain associations between factors and intention to use. Future research on acceptance of iVR should therefore incorporate the construct of personal innovativeness. On a more practical level, this study can contribute to the research-informed design and development of implementation strategies for iVR in secondary education. Our findings suggest the need for a pedagogical view from the school board on how iVR fits in the paradigms of the school, to facilitate teachers as much as possible, showing them the potential benefits, and led by the innovative educators.

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