Primary School Teachers' Information Literacy Skills and Attitudes Towards Evidence-Based Teaching

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Abstract

Primary school teachers in Spain are required by law to implement Evidence-based Teaching (EBT) to keep their practice updated. To successfully put evidence into practice, teachers should be information literate and have positive attitudes towards evidence-based teaching practice. This study explored Spanish primary school teachers' (N=120) information literacy skills and attitudes towards EBT in relation to their intention to use research evidence in schools with a survey. We also explored whether information literacy skills or attitudes were the strongest predictor of teachers' intentions to implement EBT. The correlation analyses revealed that both variables do not relate to the teachers' intention to use evidence in their practice. The multiple regression analysis model, including research attitudes and information literacy skills, did not improve the ability to predict the outcome variable. However, the simple regression analysis resulted in information literacy skills as a negative predictor of the intention to use EBT. To explain the results, contextual factors should be studied, since they might have a stronger influence than individual factors. This study is one of the first studies to explore research attitudes and information literacy skills in primary school teachers and supports professional development efforts to enhance primary school teachers' evidence-based practices.

Keywords: evidence-based teaching, primary school teachers, information literacy, attitudes towards research, intention to use evidence-based teaching.

Primary School Teachers' Information Literacy Skills and Attitudes Towards Evidence-Based Teaching

Recent studies show that teachers make decisions about how to teach based on their peers' opinions either when exchanging teaching experiences or when they ask for advice about teaching challenges they face (Morrison, Ross et al., 2014; Rodríguez-Gómez & Gairín, 2015; Slavin, 2020). In the last decades, teachers' decision-making processes based on peer learning have been criticized mainly because they are based on anecdotal evidence, experience or gut feeling and not on the newest available research evidence (Brown & Zhang, 2017; Cordingley, 2015). To tackle this problem and support teachers teaching practice, European standards (European Commission, 2012) encourage teaching professionals to implement Evidence-Based Teaching (EBT) practices, namely, to be able to search, evaluate and use evidence into practice. Following the European standards and due to the lack of evidence-based education observed in Spanish classrooms (Ministerio de educación, 2011), laws and educational policy documents in Spain (LOE, 2006; LOMCE, 2013) require teachers to be able to put evidence into practice to improve their teaching practices and students learning at large.

The need to emphasize evidence-based teaching in Spain is more prevalent than ever since teaching practices have remained unchanged for decades (Ministerio de educación, 2011), mainly because teachers find it challenging to bridge the gap between research and teaching practice and still experience difficulties to identify and use evidence in their practice (Perinés, 2018). To better support teachers to incorporate evidence in their teaching practices and bridge the research-practice gap this study aims to explore the relationships between teachers' attitudes towards evidence-based teaching, their abilities to search, evaluate and implement research findings, also known

as information literacy skills, along with their intentions to use evidence in their teaching practice. Both skills and attitudes are explored because they are necessary to meet the demand of putting research into practice (Diery et al., 2020; Impedovo & Malik, 2016; van der Linden et al., 2012).

While it is known that (Spanish) primary school teachers do not use evidence in their practices (Cabañero et al., 2020; Gairín & Ion, 2021; Ion & Iucu, 2014), this study is, to the best of our knowledge, the first focusing on primary school teachers' information literacy skills, attitudes towards the use of evidence, and the relationship of these variables with teachers' intentions to use evidence in their practices.

Our findings will contribute to the scarce literature on implementing evidence-based teaching in primary schools, since most studies in this field focus on the implementation of evidence in higher education (Diery et al., 2021; Georgiou et al., 2020; Tack & Vanderlinde, 2016). Moreover, our findings will support professional development efforts aiming to enhance primary school teachers' evidence-based practices and in the long run contribute to the bridge between theory and practice.

From Evidence-Based Medicine to Evidence-Based Teaching

Evidence-based teaching (EBT) refers to teachers' skills and expertise to make use of reliable evidence and provide a sound basis for action in their everyday practice (Brown & Zhang, 2017; Davies, 1999). EBT has its roots in medicine, where evidence-based practice (EBP) was implemented to connect theory and practice aiming to foster practitioners' professionalization and improve the quality of patients' care (Georgiou, 2020; Slavin, 2008). To achieve practitioners' professionalization, the use of relevant evidence in combination with their expertise was encouraged (Dalheim et al., 2012). However, it took decades until EBP was successfully incorporated in medical practice (Slavin, 2008).

Nowadays, education is in a similar position as when evidence-based medicine emerged (Slavin, 2008). First, because of several limitations that teachers encounter, such as lack of time, resources and support, and lack of research skills (Díaz Costa, 2010; Perines & Murillo, 2017). Second, because of teachers' resistance to change their practice and implement EBT (Georgiou et al., 2020; Morrison et al., 2014; Slavin, 2020).

Evidence-Based Teaching Practices in Spanish Schools

Despite the requirement from the Spanish government to foster the implementation of research evidence in all education levels (LOE, 2006; LOMCE, 2013), studies show that Spanish teachers rarely choose to implement new practices based on evidence (Ion & Iucu, 2014; Malin et al., 2020; Ministerio de educación, 2011). Moreover, few studies draw attention to Spanish primary school teachers, showing that even though they are aware of the benefits of the consistent and regular use of evidence to improve teaching and learning, they are resistant to implement it in their practice (Cabañero et al., 2020; Gairín & Ion, 2021; Ion & Iucu, 2014). Instead, they make decisions based on their own experience or peer knowledge (Ion et al., 2019). In this context, it is highly relevant to further explore primary school teachers' skills and attitudes and their intention to use EBT to improve students' learning.

Primary School Teachers' Information Literacy Skills and Evidence-Based Teaching

Most studies that address information literacy use the widely accepted definition of the American Library Association (2000), which defines information literacy skills as the abilities to understand, find, critically evaluate, and use information effectively (Kokic, 2012; Probert, 2009; Wen & Shih, 2008). It is crucial that teachers develop these skills in order to use scientific information in their teaching practice (Williams &

Coles, 2007). However, previous research shows that especially primary school teachers, compared to secondary and middle school teachers, feel less confident about their information literacy, which may indicate a lack of information literacy skills (Williams & Coles, 2007).

The Education and Behavioral Sciences Section of the Instruction for Educators Committee (2011) designed the ´Information Literacy Standards for Teacher Education´ (ILSTE) model to define and measure teachers' skills regarding information literacy. This framework is based on the Association of College & Research Libraries (ACRL) framework, which designed Information Literacy Competency Standards for Higher Education (2000). The ILSTE framework applies the ACRL framework standards for pre-service and in-service educators to guide them in the development, implementation, and assessment of information literacy instruction in their lessons. To achieve this, the ILSTE framework states that there are six standards that an information literate teacher should adhere to (Table 1).

These standards can be related to the steps proposed by Sackett et al. (1996) to implement EBP. This 5-step model, also referred to as the evidence cycle, is depicted besides the ILSTE standards in Table 1 to reveal the similarities (Bhandari & Giannoudis, 2006; C. Johnson, 2008). Earlier, Adams (2014) already pointed out this relation between EBP in medicine and the ACRL framework. Although the ACRL framework and the evidence cycle are designed for different purposes, they both describe the key skills required to find, evaluate, and use information to achieve the researcher's goals (Adams, 2014; Bhandari & Giannoudis, 2006). The combination of both frameworks forms a valuable basis upon which to examine the skills required to successfully perform EBT (Nail-Chiwetalu & Ratner, 2006).

Table 1

Comparison between the evidence cycle and the ILTSE framework

Steps of the Evidence cycle	Standards of the ILTSE framework
1. Identify the need for information and formulate it as answerable question.	1. Define and articulate the need for information and select strategies and tools to find that information.
2. Search for literature to answer the question.	2. Locate and select appropriate information based on the need.
3. Critically appraise the quality of the information regarding its validity, applicability, and impact.	3. Organize and analyze the information considering the audience.
	4. Synthesize, process and present the information purposefully.
	5. Evaluate the information and the information seeking process.
4. Apply the selected information to the target situation.	6. Use and distribute information ethically.
5. Incorporate the findings into regular practice.	

Following Adams' (2014) insights, the steps and standards one and two from the evidence cycle and ILTSE framework, identifying and searching for the needed information, are parallel to each other. Moreover, step three of the evidence cycle matches with standards three, four and five, referring to the evaluation of information according to context. This alignment between four out of five components of the evidence cycle strengthens the assumption that these are the required skills that a teacher needs to possess for implementing EBT. Teachers need to be able to identify their need for information and formulate it as an answerable question. Then, they should be capable of searching for the right evidence to respond the matter and evaluate if it

can be used to solve the problem or improve a situation. Finally, implement that evidence to bridge the gap between theory and practice.

Even though the development of literacy skills is necessary to implement EBT practices (Kokic, 2012; Williams & Coles, 2007), relatively little is known about primary school teachers' information literacy skills and how that affects their intentions to apply evidence on their teaching practices.

Primary School Teachers' Attitudes Towards Evidence-Based Teaching

An "attitude" is the affective predisposition that an individual experiences towards an object (Aarons, 2004; Diery et al., 2021; Wyer & Albarracín, 2005). Because of teachers' affective nature, their attitudes towards research are expected to predict their intention to use EBT (Diery et al., 2021; Georgiou, 2020).

Spanish teachers are skeptical about research and its effect on their teaching, firstly, because they experience research as abstract knowledge, distant and useless for their daily practice (Díaz Costa, 2010; Perines & Murillo, 2017). Second, they show difficulties to understand academic language (Perinés, 2018), which is experienced as "dull and meaningless slang" (Fernández Cano, 2001, p. 9), and they struggle to understand statistics (Perinés, 2018). Furthermore, Spanish teachers are resistant to change their teaching habits and use research evidence to improve their practice (Monereo, 2010; Paredes, 2004). This is because of the emotional cost of moving from a familiar situation to an unmastered practice (Paredes, 2004) and due to teachers' low self-efficacy beliefs regarding the use of evidence in practice (Williams & Coles, 2007).

All the above-mentioned relates to negative attitudes towards the use of research and, therefore, the intention to implement EBT (van der Linden et al., 2012). Positive attitudes towards research, such as being motivated to use evidence in teaching-related activities (Diery et al., 2021), are crucial for teachers to apply research evidence in their

practice and, consequently, enhance students' learning process (Georgiou, 2020). However, little attention has been paid specifically to primary school teachers' attitudes towards research and how this influences their intention to implement EBT.

The Relationship Between Teachers' Information Literacy Skills, Attitudes Towards Research and Intention to Implement Evidence-Based Teaching

The relationship between skills and attitudes towards evidence implementation has already been established in the medical field (specifically in medical education) in which evidence-based practice has its roots (Georgiou, 2020; Slavin, 2002). This is why this study builds on the knowledge base provided from this field.

Research in medicine shows that professionals need to possess information literacy skills and have positive attitudes towards evidence-based practices to be able to successfully incorporate evidence into practice (Labrague et al., 2019; Melnyk et al., 2004; Rousseau & Gunia, 2016). Despite the importance of the two variables, there are inconsistent findings about which one might influence the implementation of evidence the most. For example, a few studies in nursing education report a stronger influence of attitudes over skills (Melnyk et al., 2004; Ruzafa-Martínez et al., 2016). Practitioners' positive attitudes towards evidence-based care encouraged them to develop their research skills; whereas more recent literature (Labrague et al., 2019; Lim et al., 2012) suggests that skills have a stronger influence on practitioners or trainees than their attitudes towards research.

In teacher education, there is limited research discussing the importance of skills and attitudes on EBT implementation. Recent work on pre-service teachers' evidence use showed that information literacy skills is a strong predictor of evidence implementation (Flores, 2018; Furlong, 2014) suggesting that skills might have stronger influence on the use of research in comparison to attitudes. Given that pre-service

teachers teach at schools after their studies and based on the findings of the aforementioned study, it is expected that information literacy skills will remain the strongest predictor of EBT use.

Overall, evidence relating skills and attitudes towards evidence-based practices is scarce and contradictory (e.g., Labrague et al., 2019; Ruzafa-Martínez et al., 2016). Thus, it is necessary to understand the relationship between skills and attitudes and to determine which one is the strongest predictor of the intention to use research evidence in teaching practice to properly support teachers' evidence-informed professional development. This way, policymakers and universities can have a clear aim when training pre-service and in-service teachers and promote evidence-based practices efficiently. To our knowledge, this is the first study to investigate the role of attitudes and information literacy skills towards the implementation of EBT.

The Present Study

This study aims to shed light on the relationships between Spanish primary school teachers' information literacy skills, attitudes towards EBT, and their intention to use evidence in their teaching practice. We also explore which of the two variables is the strongest indicator of teachers' intentions to put evidence into practice. The research questions are formulated as follows:

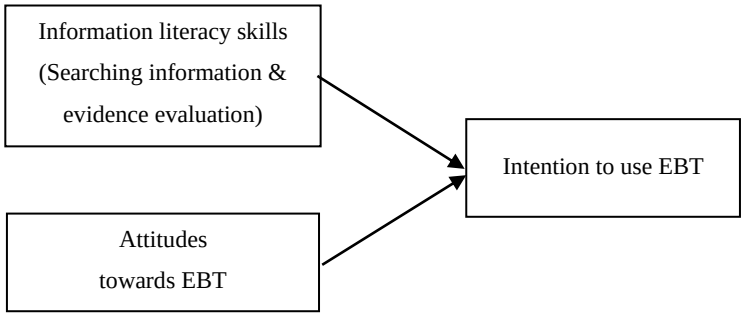
1. To what extent do Spanish Primary school teachers' information literacy skills and attitudes towards evidence-based teaching associate with their intention to use research evidence in their teaching practice?

2. What is the strongest predictor among information literacy skills, and research attitudes towards determining Primary school teachers' intention to use evidence in their practice?

Studies in medicine show that information literacy skills and positive attitudes towards evidence-based practices is a prerequisite to successfully use evidence in practice (Labrague et al., 2019; Melnyk et al., 2004; Rousseau & Gunia, 2016). Thus, it is hypothesized that a strong positive correlation will be found between both teachers' attitudes towards EBT and their information literacy skills and their intention to use research evidence in their practice (see Figure 1). Moreover, since some studies have advocated the implementation of information literacy skills training for pre-service teachers as a way to improve the use of EBT, it is hypothesized that, out of the two independent variables, teachers' information literacy skills is the stronger predictor of their intention to use research evidence in their practice (Flores, 2018; Furlong, 2014).

Figure 1

Model of factors predicting teachers' intention to use EBT



Methodology

Research Design

A correlational design (Curtis et al., 2016) and survey methods were used to quantitatively investigate the relation between information literacy skills and attitudes towards EBT with the intention to use EBT of primary school teachers. This design was deemed appropriate, since the studied variables can be quantitatively measured, which

allows for calculations with, and statistical analysis of the data (Watson, 2015). Moreover, survey methods can be used in a cost-effective and anonymous way, making them a feasible option for this study (Nardi, 2018).

Participants

Based on power analysis using the G*Power tool (version 3.1), a minimum of *N* = 119 Spanish primary school teachers were needed to perform a regression analysis (Faul et al., 2009). Whereas 263 teachers entered the survey, a total sample of *N* = 120 participants (91% female) completed it. Most of the participants (61%) ranged from 18 to 30 years old. As for the participants' educational background, the majority were bachelor's graduates (60%) followed by master's graduates (28%). In terms of their working position at school, most of the participants were specialists, which includes English as foreign language teachers and physical education teachers (55%). Regarding their teaching experience, the majority ranged from 1 to 5 years (63%). Table 2 provides a detailed overview of the sociodemographic characteristics of the participants in this study.

Table 2

Sociodemographic Characteristics of Online Questionnaire Participants

Variable	n	%
Gender		
Female	109	8
Male	10	91
Binary	1	1
Age		
18-25	39	33
26-30	34	28
31-40	18	15
41-50	10	8
50-60	19	16

Educational Background		
Bachelor's degree	72	60
Post bachelor's degree	13	11
Master's degree	34	28
PhD	1	1
School position		
Classroom teacher	60	50
Only classroom teacher	45	38
Classroom teacher and specialist	12	10
Classroom teacher and team leader	3	2
Specialist	66	55
Only specialist	50	41
Specialist and classroom teacher	12	10
Specialist and team leader	2	2
Specialist and management team	2	2
Management team	6	5
Years of teaching experience		
1-5	75	63
6-10	9	8
11-15	10	8
16-20	11	9
> 20	15	13

Translation and Pilot Testing

The instruments used were originally written in English and therefore were translated using the back-and-forth translation method (Body et al., 2021) to Spanish following four steps: (1) initial (forward) translation— one of the researchers, with Spanish as her mother tongue, conducted the first translation from English to Spanish; (2) back translation— two Spanish master students of the education field and proficient in the English language translated the Spanish scales back to English; (3) the translations were compared and discussed to ensure that all items were linguistically

equivalent; (4) testing the pre-final version— the Spanish version of the scales was pilot-tested by four Spanish primary school teachers. This group determined its clarity, comprehensibility, and duration after which small adjustments were made (e.g., making the main ideas and concepts bold). Furthermore, to keep psychometric qualities of the instruments, only terms that described psychology or therapist contexts were modified (e.g., "patient" became "student").

Instruments

For the data collection, a four-part online survey was conducted (Appendix E). In the first part, primary school teachers were asked sociodemographic questions about their gender, age, higher education, current job or jobs, and years of teaching experience (6 items). In the second part, the following test and scales were administered:

The Information Literacy Test

The Information literacy test consisted of 22 items that measured the participants' information literacy skills (Leichner et al., 2013). The test was divided into two parts, the first part evaluated the searching for information ability (14 items) and the second part assessed the evaluating information ability (8 items). All items were multiple-choice except one item which requires participants to answer using catchwords (Which criteria can be used to judge the quality of a book or a journal article?). All multiple-choice items had three possible answers with one exception that had two instead (Which statement is true? "The reputation of a publisher is more important when evaluating the quality of…). An example of an item with three possible answers was "Which are the features of a scientific internet forum?" and the answer options were: *The forum is provided by a reputable organization; Entries are achieved, so that the discussion can be retraced; Authors publish using their real names instead of*

pseudonyms. More than one answer could be correct and each of them was scored with 0.33 points, scoring a maximum of 22 points.

In the original paper, the test showed a good reliability ($\alpha = 0.82$) but no information about the factor structure was mentioned (Leichner et al., 2013). For this study, Cronbach's alpha was calculated to substantiate the construct's reliability, which revealed questionable internal consistency ($\alpha = .66$) (Gliem & Gliem, 2003). No further validation analysis was performed (Confirmatory or Exploratory Analysis) since to validate a test, Item Response Theory is the appropriate analysis to be carried out. This analysis was beyond the scope of the present research and the expertise of the researcher.

The Attitudes Towards Research Subscale

The attitudes towards research subscale, which is part of the Evidence-based Teaching scale (Georgiou, 2020), is a six-point Likert scale ranging from 1 ('*strongly disagree')* to 6 ('*strongly agree'*). The subscale consisted of 10 items of which teachers can indicate their level of agreement regarding the use of evidence in teaching practices. An example of an item was: "Previous teaching experience is more important than the use of current research evidence".

To check the validity of the test, a confirmatory factor analysis (CFA) was performed. Items 1, 3, 5, 6, and 10 were removed one by one until a good fit was achieved. The removed items might not be suitable to measure teachers' research evidence attitudes since they covered other issues instead of the teachers' reflections on their practice. Items 1 ("Previous teaching experience is more important than the use of current research evidence"), 3 ("Teachers should decide based on their experience if and how they want to make use of current research findings"), and 6 ("Teaching based on current research evidence is a waste of time") might have explored teachers' beliefs

about how they should approach evidence-based teaching practices. Items 5 ("Experienced teachers should disregard research evidence when it conflicts with their intuition") and 10 ("My teaching experience influences how I judge evidence-based recommendations") might have included teachers' influence of experience on the use of evidence. The remaining items share at least 37.5% of their variance with their designated construct and are presented in table 3. The final CFA model indicated a good fit ($\chi^2(5) = 9.681$, $p = .085$, RMSEA = .088, CFI = 0.970, TLI = 0.939. For the reliability of the test, Cronbach's alpha was calculated. The results revealed an acceptable internal consistency of the remaining items ($\alpha = .79$) (Gliem & Gliem, 2003).

Table 3

One-Factor Confirmatory Analysis Solution and Item Factor Loadings

Item	**Factor Loadings**
1. Previous teaching experience is more important than the use of current research evidence.	.57
2. Teachers, in general, should not practice teaching based on current evidence because teaching is about people and students, not statistics.	**.63**
3. Teachers should decide based on their experience if and how they want to make use of current research findings.	.55
4. The judgment of esteemed colleagues offers a better basis than current research evidence.	**.69**
5. Experienced teachers should disregard research evidence when it conflicts with their intuition.	.50
6. Teaching based on current research evidence is a waste of time.	.51
7. There is no reason for me to implement EBT because it is just a fad that will pass with time.	**.67**
8. I know what is best for my students without examining the current research evidence.	**.63**
9. Teaching based on current research evidence ignores the "art" of	**.68**

teaching.	
10. My teaching experience influences how I judge evidence-based recommendations.	.14

Note. Bolded factor loadings have been kept for the final analysis.

The Evidence-Based Practice Self-Use Scale

The self-use of EBP test assesses the frequency of use of EBP in Canadian therapists (al Zoubi et al., 2018). This instrument is a five-point Likert scale consisting of 9 items describing self-use of EBP. Participants indicated how often they have done these practices ranging from ‘never’ to ‘more than 10 times a month’. An example of an item was: “Formulate a question to guide a literature search based on a gap in your knowledge?”.

To check the validity of the test, a CFA was conducted, indicating a poor fit ($\chi^2(27) = 94.84$, p = < .05, RMSEA = .015, CFI = 0.85, TLI = 0.79). Consequently, an Explanatory Factor Analysis (EFA) was performed to determine the number of underlying constructs (Yong & Pearce, 2013). An oblique rotation was used in the EFA because of the usual correlation between factors in the educational field (Schmitt & Sass, 2011). The EFA revealed a two-factor solution. Factor 1 (Defining and searching for evidence) included items 1 (“Identify a gap in your knowledge related to a student situation (e.g. curricular adaptation, assessment, behaviour)?”), 2 (“Formulate a question to guide a literature search based on a gap in your knowledge?”), and 3 (“Effectively conduct an online literature search to address the question?”) referring to the first two steps of the evidence cycle (Sackett et al., 1996) about defining and articulating the need for evidence research and selecting the information based on that need. Factor 2 (Evaluating and implementing evidence) involved the rest of the items (see table 4) related to the third, fourth and fifth steps of the evidence cycle (Sackett et

al., 1996) about appraising the quality of the research evidence, applying the selected information, and incorporating the findings into regular practice. The items and their factor loadings are presented in table 4. Cronbach's alpha of Factor 1 and Factor 2 was calculated to ensure their reliability. Results showed questionable internal consistency of Factor 1 ($\alpha = .60$) and good internal consistency of Factor 2 ($\alpha = .86$) (Gliem & Gliem, 2003).

Table 4

Explanatory Factor Analysis and Item Factor Loadings

Item	**Factor Loadings**	
	1	2
1. Identify a gap in your knowledge related to a student situation (e.g. curricular adaptation, assessment, behaviour)?	.81	
2. Formulate a question to guide a literature search based on a gap in your knowledge?	.60	
3. Effectively conduct an online literature search to address the question?	.58	
4. Critically appraise the strengths and weaknesses of study methods (e.g. appropriateness of study design, recruitment, data collection, and analysis)?		.88
5. Critically appraise the measurement properties (e.g. reliability and validity, sensitivity and specificity) of standardized tests or assessment tools you are considering using in your practice?		.79
6. Interpret study results obtained using statistical tests and procedures (e.g. t tests, logistic regression?)		.79
7. Determine if evidence from the research literature applies to your student's situation?		.72
8. Decide on an appropriate course of action based on integrating the research evidence, educational judgment, the student and the student's family preferences?		.68
9. Continually evaluate the effect of your course of action on your student's outcomes?		.56

Procedure

This study was conducted after submitting an application to the Ethics Review Board of the Faculty of Social & Behavioural Sciences (FERB). After the ethical approval, two non-probability sampling methods were used for the recruitment of participants (Acharya et al., 2013; Etikan & Babat, 2017). The first method was the convenience sampling, in which the sample is chosen based on a set of criteria that the researcher has established (Acharya et al., 2013; Etikan & Babat, 2017). In this case, in-service primary school teachers in Spain that were part of the researcher's network were contacted through WhatsApp and LinkedIn. The second method was snowball sampling, which entails obtaining additional participants through information provided by the purposive sample respondents (Etikan & Babat, 2017). Once the teachers that were part of the network conducted the survey, they were asked to send the information to other colleagues.

Before starting the survey, participants were informed about the purpose of the study (Appendix C), that their data was collected anonymously and that it was evaluated for scientific research purposes only. After that, they were asked to provide informed consent (Appendix D). The online software Qualtrics was used as the survey platform to process and distribute data.

Data analysis

Data analysis has been conducted using the software's SPSS and R. First, for reliability analysis, Cronbach's alpha was used to determine the internal consistency of the instruments in SPSS. For validity analysis, Confirmatory Factor Analysis (CFA) of the modified scales was conducted using the R software, and the lavaan package (Rosseel, 2012). When the analysis resulted in a poor fit, an Explanatory Factor Analysis (EFA) was used to identify the underlying factor structure in SPSS (Yong &

Pearce, 2013). For the main analysis, SPSS was used to check assumptions of independence, absence of outliers, linearity, normality, multicollinearity, and homoscedasticity. Descriptive statistics were also calculated. To answer the first research question a multiple correlation coefficient (R) was performed between the independent variables (information literacy skills and attitudes towards EBT) and the dependent variable (the intention to use EBT). A regression analysis was carried out to answer the second research question. For this analysis, the "enter" method was used (Field, 2013). The standardized Beta coefficients of the independent variables were compared to determine which of the independent variables has a stronger influence on the intention to use EBT.

Results

Preliminary Analysis and Descriptive Statistics

Preliminary analyses were conducted to ensure that the assumptions of normality, linearity, homoscedasticity, independence, absence of outliers, and multicollinearity were not violated before conducting the correlation and the regression analysis. The assumption of normality was violated for the research attitudes and the intention to use EBT variables since the histogram and the Normal Probability Plot test revealed that data were positively skewed. According to the central limit theorem, a sample distribution approaches a normal distribution as the sample size gets larger regardless of the shape of the population from which the sample was drawn (Field, 2013). Because of this theorem and the moderate sample size (Field, 2013) the analyses were still conducted. The non-parametric Spearman test was used to perform the correlation analyses.

The assumptions of linearity and homoscedasticity were checked with residual scatter plots and the Levene's test was applied to check for insignificance (Field, 2013). The results revealed that both assumptions were met. The assumption of absence of outliers was satisfied by checking the boxplot for every variable. For the regression analysis, the assumptions of independent error and multicollinearity were also checked (Field, 2013). The assumption of independent errors was met (Durbin-Watson value = 1.959) as well as the assumption of multicollinearity (Tolerance = .94, VIF = 1.06).

Table 5 provides an overview of the descriptive statistics. Primary school teachers scored 57.4% on the information literacy test, similarly to German 1st year psychology students (54%) that previously participated in the test (Leichner et al., 2013). This is a relatively low score when compared to 3rd and 4th year students (62%) and PhD students (78%) of psychology. Regarding the attitudes, participants seem to possess moderately positive attitudes towards research evidence (M = 2.50, SD = 0.85). Teachers' intention to use EBT showed that on average they reported to make use of evidence one or two times every six months (M = 2.19, SD = 0.63).

Table 5

Descriptive Statistics

Variables	*M*	*SD*	Mdn	Maximum	Minimum
Information Literacy Skills	12.62	2.02	12.54	16.83	7.92
Attitudes Towards EBT	2.50	0.85	2.30	5.40	1.20
Intention to use EBT	2.19	0.63	2.11	4.11	1.11

Note. Total sample N = 120.

The Relationship Between Teachers' Information Literacy Skills, Attitudes Towards Research Evidence, and the Intention to Use Evidence in their Teaching Practice

To answer the first research question, a correlation analysis was conducted. A Spearman test was performed to determine the relationship between primary school teachers' information literacy skills and research attitudes with their intention to use research evidence in their teaching practice. The findings are presented in Table 6.

A non-significant negative correlation was found between information literacy skills and the intention to use EBT, ($r(120) = -.17$, $p = .062$). Results showed that only 2.9% of the variance can be explained, indicating a small effect (Cohen J., 1988). This suggests that there is no significant correlation between information literacy skills and the intention to use EBT in Spanish primary school teachers. Also, a non-significant correlation was found between attitudes towards research evidence and the intention to use EBT, $r(120) = .03$, $p = .715$. This finding revealed that only 0.1% of the variance can be explained, indicating an extremely small effect (Cohen J., 1988). This implies that research attitudes and the intention to use EBT in Spanish primary school teachers might not be related. The correlation between information literacy skills and attitudes towards EBT is out of the scope of this study.

Table 6

Spearman's Correlation between the Variables

Variables	*M*	*SD*	1	2
1. Information Literacy Skills	12.62	2.02	-	-
2. Attitudes Towards EBT	2.50	.85	-.25**	-
3. Intention to use EBT	2.19	.63	-.17	.03

*Note. **. Correlation is significant at the 0.01 level (2-tailed).*

The effects of Primary School Teachers' Information Literacy Skills and Attitudes Towards Research on their Intention to Use Evidence-Based Teaching

To answer the second research question, a multiple regression analysis was performed to examine the strongest predictor among information literacy skills and research attitudes towards determining primary school teachers' intention to use evidence in their practice. The results are reported in Table 7. Results showed that only 3.7% of the variance can be explained, indicating a small effect (Cohen J., 1988). However, the results were not significant, meaning that fitting the model does not improve the ability to predict the outcome variable ($F(2, 117) = 2.23$, $p = .112$, $R^2 = .037$). Regarding the effects of the predictors, teachers' research attitudes resulted in a non-significant predictor of the intention to use evidence in teachers' teaching practice ($\beta = -.002$, $p = .986$). Teachers' information literacy skills, however, resulted in a significant negative predictor of the intention to implement EBT ($\beta = -.191$, $p = .043$). Therefore, information literacy skills is a significant negative predictor of the intention to use evidence in the teaching practice with a small effect ($r = .192$). This means that teachers with more information literacy skills are predicted to have slightly less intention to use EBT.

Table 7

Regression Analysis Primary School Teachers' Intention to Use Evidence in their Practice

Variables	*B*	*SE B*	*β*	*t*	*p*
Information Literacy Skills	-.059	.029	-.191	-2.042	.043
Attitudes Towards EBT	.001	.069	-.002	.018	.986

Note. $R^2 = .037$ ($N = 120$, $p = 0.52$).

Discussion

The aim of the present study was to investigate primary school teachers' information literacy skills and research attitudes towards their intention to use evidence in their teaching practice. In addition, to further support professional development efforts and shed light on the relationships among the aforementioned variables, we investigated which variable, information literacy skills or research attitudes, was the strongest predictor of primary school teachers' intention to use evidence in their teaching practice. The descriptive findings showed that primary school teachers have a low level of information literacy skills, moderately positive research attitudes and that they use evidence once or twice every six months. The correlation analysis revealed no significant relationships among the variables. Moreover, the multiple linear regression analysis revealed that the model including information literacy skills and research attitudes did not improve the ability to predict the intention to implement EBT. However, when running simple linear regressions, teachers' information literacy skills resulted in a significant negative predictor of the intention to use evidence in practice. This means that teachers with higher information literacy skills had less intention to use evidence in their teaching practice. These findings are discussed in detail in the following sections.

The Non-Significant Association Between Primary School Teachers' Information Literacy Skills and Research Attitudes Towards the Intention to Use Evidence-Based Teaching

The first question in this study sought to determine whether primary school teachers' information literacy skills and research attitudes were related to their intention to implement EBT. As depicted from the results of our study, and contrary to our original assumptions and literature in the field (e.g., Labrague et al., 2019; Melnyk et

al., 2004), this study did not identify a significant relationship between teachers' information literacy skills and research attitudes towards their intention to use evidence in their teaching practice.

The AMO framework might be able to explain these results by shedding light on why teachers adopt or reject EBT based on their ability (A), motivation (M), and opportunities (O) to participate in evidence-based teaching practices (Rousseau & Gunia, 2016). The abilities and the motivation refer to individual factors, which in this study relate to teachers' information literacy skills and their research attitudes. However, the opportunities to practice correspond to a contextual factor as it refers to the support that teachers are provided with to use evidence in their practice (Sebastian et al., 2019). Contextual factors include the elements that can act as facilitators or as barriers to apply theory into practice and can directly affect the individual factors (Rousseau & Gunia, 2016). Jette et al. (2003) specifically state that without experiencing the opportunity to practice, teachers are less likely to implement EBT even though they have the ability and the motivation.

Previous research in health care found that time availability, leadership support and access to resources positively influenced the uptake of practices based on evidence (Bonham et al., 2014; Dalheim et al., 2012; Malik et al., 2015). Similarly, in education, it was found that external financial resources and the school management team support facilitated the implementation of EBT, since the funding could be used to provide training sessions and the team leaders encouraged the application and sustainability of the new practices (Johnson et al., 2017; Sebastian et al., 2019). Lack of time and readily accessible evidence were revealed as hindering contextual factors to the implementation of EBT in primary and secondary school teachers (Forman et al., 2009; Williams & Coles, 2007). It could be that primary school teachers' skills and attitudes will not relate

to their intention to use evidence in their teaching practices, even though the teachers might be information literate and have positive research attitudes. The reason for this could be the lack of opportunities to practice. This suggests that contextual factors can play a bigger role than skills and attitudes when it comes to the intention to use evidence in teaching practices. Therefore, the findings of this study on primary school teachers' information literacy skills and research attitudes might have been affected by the opportunities that the teachers might have had to practice EBT.

Further research is required to examine the teachers' opportunities to practice EBT to develop a full picture of the factors influencing the intention to use evidence in the teaching practice. Interviews with schools' teaching staff and management teams might explore the opportunities that act as facilitators for primary school teachers to use evidence in their practice.

Primary School Teachers' Information Literacy Skills as a Negative Predictor of the Intention to Use Evidence-Based Teaching

The second research question aimed to determine the strongest predictor among information literacy skills and research attitudes towards determining Primary school teachers' intention to use evidence in their practice. In contrast to already existing findings suggesting that skills might have a stronger (Flores, 2018; Furlong, 2014) and a positive influence (Emmons et al., 2009; Kokic, 2012; Williams & Coles, 2007) on the use of research in comparison to attitudes, this study revealed that primary school teachers' information literacy skills negatively predicted the intention to use EBT. This means that the more information literate teachers were, the lower their intention to use evidence in practice was. Although this finding needs to be considered with caution since it only explained 3.7% of the variance described by the model, it remains striking.

There are several possible explanations for this finding. First, the demographics of the participants of the current study could have influenced the results. Spearman´s Rho correlational analyses revealed significative negative correlations between both age (r=-.204) and years of teaching experience (r=-.226) with information literacy skills (p<0.05). This means that the younger and less experienced teachers are, the more information literate they are. This result is consistent with previous literature on teaching education programs, where the acquisition of information literacy skills was targeted to encourage the implementation of research in their future teaching practice (e.g., Crouse & Kasbohm, 2005; Emmons et al., 2009; Hammons, 2020; Kokic, 2012). However, young and less experienced teachers who possess information literacy skills, might not use evidence in their practice because of several difficulties that novice teachers face when entering the school context (Korthagen, 2010). These difficulties, such as the number of learners, students' special learning needs or behavior management (Hoban, 2005), might take most of the novice teachers' available time, resulting in little or lack of time to search, evaluate and implement research evidence in their practice.

Another possible explanation might be related to the sample used in prior studies. Most of the found literature was in the medical field (e.g., Labrague et al., 2019; Lim et al., 2012; Rosman et al., 2016) and the little studies performed in education explored primary school teachers' students (Kokic, 2012) and primary school teachers together with secondary school teachers and school management teams (Williams & Coles, 2007). This might suggest that results can differ depending on the professional field, type of teacher (pre- or in-service teachers) and the teaching level. Therefore, more research is needed to explore possible differences in the use of evidence in the teaching practice between teaching professionals at different positions.

In addition, in the original paper of the information literacy skills test, no information about the factor structure was mentioned (Leichner et al., 2013) and no further validation analysis has been conducted since it was beyond the scope of the current study and the researcher's expertise. Therefore, the Leichner et al. (2013) test might not have been sufficient to capture primary school teachers' information literacy skills. This might explain why the results regarding the predictive value of the independent variables did not turn out as hypothesized.

Limitations and Future Research

The current study presents several limitations that can provide directions for future research. The first limitation is about the validity, reliability, and appropriateness of the test and the scales used. Regarding the information literacy test (Leichner et al., 2013), an Item-response analysis should have been conducted to evaluate the multiple-choice scoring of the test (Toland, 2013). Checking if this test is sufficient to explore primary school teachers' information literacy skills is an important issue to be considered in future research. Concerning the attitudes scale (Georgiou, 2020), although the scale provided a good fit model after several modifications this scale might benefit from some adjustments. The original scale was validated for teacher educators (Georgiou, 2020). Therefore, more specific items about evidence use in the school context could be added to measure primary school teachers' research attitudes, after which the validity of the scale in this group should be further explored. Lastly, the intention to use EBT scale was originally designed to measure the use of evidence-based practices in therapists and not primary school teachers. Moreover, it was not subject to validity or reliability analysis in the original study. The findings of this study revealed a poor fit of the CFA and removing items did not improve it. An EFA was run which resulted in two factors with questionable (Factor 1, $\alpha = .60$) and good (Factor 2, α

= .86) internal consistency. Thus, this scale might not be valid to measure the intention to use EBT in primary school teachers. Future research should develop an instrument that measures primary school teachers' intention to implement teaching practices based on evidence.

The second limitation is that the attitudes and the intention to use EBP scales are entirely based on self-reported data collection methods. Self-reported data is prone to social desirability bias, which means that participants' answers can be over or underreported to be more socially acceptable, reducing their validity (Grimm, 2010). To minimize this effect, the online questionnaire stated that data anonymization and confidentiality were ensured and that there were no correct answers. Research attitudes results revealed that teachers have moderately positive attitudes towards research. However, the data was positively skewed (indicating more positive attitudes), which might be related to social desirability bias. Further studies could complement the survey data with interviews to improve the understanding of the relationship between teachers' research attitudes and their intention to implement EBT (Tack & Vanderlinde, 2014). Regular observations of teachers' teaching practice could also help to minimize the social desirability bias effect (Fryer & Dinsmore, 2020).

The third limitation relies on the demographics of the sample used. Most of the participants were young primary school teachers (up to 30 years old), while the average age of Spanish teachers lies between 40 to 50 years old (Ministerio de Educación, 2020). This fact makes the sample not representative of all Spanish Primary school teachers and, therefore, the findings cannot be generalized to the whole population of Spanish primary school teachers. Future research could include teachers of different ages and teachers with different years of teaching experience to better the external

validity and to test the relationship between age and experience towards the intention to use evidence in their teaching practice.

The fourth and last limitation is that this current study did not explore the role of contextual factors in the intention of primary school teachers to implement EBT. Further research could investigate the support teachers receive from their management team to implement evidence in their teaching practices, the access they have to research evidence, and their time availability to search, assess, and implement evidence in their teaching practice (Forman et al., 2009; S. R. Johnson et al., 2017; Sebastian et al., 2019; Williams & Coles, 2007).

Implications

The findings of this research contribute to the understanding of and literature about the intention to use EBT in primary school teachers. The results suggest that information literacy skills and research attitudes do not correlate with teachers' intention to use evidence in their teaching practice. A possible explanation is that contextual factors might play a bigger role or must be there for information literacy skills and research attitudes to be able to play a role.

If contextual factors are more influential or a prerequisite for the implementation of evidence in the teaching practice, professional development programs could provide teachers with opportunities to practice EBT (Johnson et al., 2017; Sebastian et al., 2019). These programs could offer teachers readily accessible evidence and planned sessions where they could discuss, within their working schedule, how to apply research evidence and exchange their experiences when they have implemented them (Czerniawski et al., 2016). Additionally, these professional development programs could be designed for different levels of expertise in the teaching context, offering extra

support to novel teachers and more autonomy to experienced teachers (Fischer, 2021). This might contribute to bridging the gap between theory and practice and encourage primary school teachers to integrate evidence in their teaching practice sustainably.

Conclusions

This study investigated Spanish primary school teachers' information literacy skills and research attitudes towards their intention to use EBT, which is, to the best of our knowledge, an unprecedented contribution to the scarcity of literature on this target group and on evidence-based practices. Unexpectedly, this study did not find a significant relationship between teachers' information literacy skills and research attitudes towards their intention to implement evidence. When running a multiple regression, information literacy skills resulted in a negative predictor of the intention to use EBT with a small effect size. Regardless of the shortcomings of the present study, this study is one of the first studies to explore the role of attitudes and information literacy skills on primary school teachers' intention to use evidence. To gain more insight into the different variables that might influence teachers' intention to use EBT, future research should include primary school teachers from different age groups, use scales that are reliable and validated, and explore contextual factors.

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Appendix A

Assignment 4

This research plan considers some risks and limitations that might appear during the research process and describes the measures that have been taken or will be taken to deal with them. These are about the sample, the instruments, and the data management.

First, this study aims to analyze a very specific target group: primary school teachers from Spain. This can be considered a limitation since the researcher is not living there now, however, the researcher's teaching experience in the Spanish system already provides a large network of in-service teachers to contact with and, together with the snowball sampling method, a sufficient number of participants is expected to reach the aimed sample. Moreover, the researcher not living in the same country of the participants might difficult the process of collecting data but through the instant messaging platform WhatsApp and the social media platform LinkedIn this issue will be covered.

Second, the effort and time required from participants to conduct the online survey can become a feeling of rejection not to participate in the study. In line with this limitation, the online survey will be sent via WhatsApp and posted on Linked with a catchy message about the need of this study and a more developed argumentation in the information letter at the beginning of the online survey. This is expected to motivate teachers to take an active role in the improvement of the education field and participate in the research.

Another limitation can be found regarding one of the scales. The instrument that measures the intention to use EBT practices relies on self-reports of attitudes, challenges, and behavior. This reduces the validity of the results because people are often biased when they report on their own experiences and prone to social desirability

(Desimone, 2009; Wetzel et al., 2016). In order to address this, in the introductory explanation of the intention to use EBT test, it is stated that there are “no right/wrong answers” and the anonymity and confidentiality are assured.

Third and last, this research plan considers several measures to handle and storage participants’ information safely. An information letter with informed consent has been designed (Appendix 3) to notify the participants that the survey is anonymous, so no information that can be related to them is asked. Moreover, the software Qualtics includes the option to uncheck the IP addresses so participants cannot be traced back. Data will be treated confidentially and will be stored in the personal OneDrive cloud of the Utrecht University researcher’s account.

Appendix B

Timetable

		Meetings	To do
MARCH	W10	Meeting 2: Round tables	Assignment 2
	W11		
	W12	Peer feedback	Assignment 3
	W13		
APRIL	W14	Meeting 3: Supervision	Assignment 4 If ethical approval, send WhatsApp's and post the survey in LinkedIn for data collection.
	W15		
	W16		
	W17		
MAY	W18		Start analysis of data + results section
	W19	Peer feedback	
	W20		DEADLINE: Draft version thesis
	W21	Meeting 5: supervision + teacher feedback	Conference registration Start the conclusion
JUNE	W22	Peer feedback (Practice presentations)	Assignment 5 Assessment period of the second assessor
	W23		DEADLINE: Final Master's thesis + SCROL form Assignment 6 Start the limitations and future research.
	W24	Master's thesis conference	Prepare presentation Assignment 5 Hand-in draft
	W25		
	W26		
JULY	W27		Aimed DEADLINE
	W28		DEADLINE resit.

Appendix C

Information letter

Dear participant,

Through this letter we would like to ask you to participate in the student dissertation research "The role of Information Literacy Skills and Attitudes Towards Evidence-Based Teaching Practices". This study aims to analyse the gap between theory and practice in Primary school education. So, if you are a Primary school teacher working in the Spanish educational system, your contribution is very valuable.

Study background

Recent studies show that teachers take decisions about teaching and learning based on the advice of other teachers before they consult evidence. Even though they are aware of its benefits to improve in their practice, it is found that they have difficulties to achieve this and, instead, they fall back on teaching methods they have always used. International institutions and national laws, demand for primary school teachers to be research-engaged and implement evidence-based teaching (EBT) practices. To do so, it is required that educators have a positive attitude towards research and that they are capable of searching and selecting research that will answer their educational needs. This ability is called information literacy and it is part of the Framework for 21st century Learning.

By surveying broadly across Primary school teachers working in Spain, it is expected to analyse your information literacy skills and your attitudes towards research, and the relation of both with your intention to use evidence-based teaching practices in class. The insights gained from this study will lead to a better understanding of the gap between theory and practice in primary school teachers and to improve the pre-service teaching curriculums. The survey is organized in 5 parts. The first 4 parts are the required ones to participate in the study and take 20 minutes. The 5th part is complementary and only if you have enough time, we ask you to do it and contribute to the development of the test for a deeper understanding of the teachers' evidence evaluation skill. Completing all 5 parts will take 40 minutes approximately.

Voluntary participation and confidentiality of data processing

Involvement in the study is voluntary. You can end your participation in the study at any time, without any explanation and without any negative consequences. If you end your participation, we will use the data collected up to that point. Before you start the survey, we ask you to sign the informed consent form (also an online form).

The collected data will be anonymous and the computer on which your personal details is stored is secured to the highest standards, and only the researchers involved will have access to this data. Your data will be stored for at least 10 years. This is in accordance with the guidelines provided by the VSNU Association of Universities in the Netherlands. Please refer to the website of the Authority for Personal Data: https://autoriteitpersoonsgegevens.nl/nl/onderwerpen/avg-europese-privacywetgeving, for more information about privacy.

If you have an official complaint about the study, you can send an email to the complaints officer at klachtenfunctionaris-fetcsocwet@uu.nl. If you would like to ask the researcher about anything that is unclear or if you would like some additional information, you can use the email address: mrodriguez@students.uu.nl.

Thank you for your contribution.

María Rodríguez Alcolea

Appendix D

Statement of Consent

Hereby declare that have read the information letter concerning research "Information Literacy Skills and Attitudes Towards Evidence-Based Teaching Practices" and to agree to participate in the research. This means that I have been made aware of the next points and that I agree with:

- The purpose and content of this study.
- The manner in which the data will be handled.
- The participation in this student research project is voluntary and anonymous.

In addition, it is clear to me that:

- This research has been approved by the Faculty Ethical Assessment Committee (FERB) for the studies of Social Sciences.
- To whom I can contact when I have complaints or questions about his research.

I hereby agree to the above conditions and to participate in this research.

Yes/No

Appendix E

Instrument survey

Sociodemographic Questions

1. What is your gender?

2. How old are you?

3. Do you have higher education studies? Which ones (degree, master's degree, PhD)?

4. Which is your position as a primary school teacher (classroom teacher, team leader, management team)?

5. Do you have a second job in the educational field (eg. Researcher at university)?

6. How long have you been working as a teacher?

Information Literacy Test (Leichner et al., 2013)

Questions with * have been adapted. The underlined options are the correct ones.

1. You come across the following citation:

Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), ***Organization of memory*****. New York: Academic Press.**

Which publication type are you dealing with?

Articles in a scientific journal

Monograph

Article in an edited book

*** 2. Which option is most effective when resources (eg. A book) are not available at your local library?**

Contacting libraries in nearby cities, eventually going there

Use "cataleg Aladi"

There is no alternative except to buy the literature

3. Which types of literature are indexed in an electronic library catalog?

Books available at the library

Journals available at the library

Journal articles

4. Which of the following statements about the electronic library catalog are true?

The library catalog indicated whether a book is currently on loan

The library catalog indicated whether the library has a subscription of a certain journal

Books which are unavailable or currently on loan can be ordered via Interlibrary loan using the library catalog.

5. You come across the following citation:

Tulving, E., & Watkins, M. J. (1974). On negative transfer: Effects of testing one list on the recall of another. *Journal of Verbal Learning & Verbal Behaviour*, 13 (2), 181-193.

Which opportunities exist to obtain the publication?

Searching the electronic library catalog for the journal

Searching the electronic periodicals index for the journal

Searching the electronic library catalog for the journal article

6. What are the advantages of using Google Scholar instead of specialized databases?

Google Scholar searches each entry (mostly journal articles) in its entirety for the search term, whereas specialised databased only search the keywords that are linked to the entries

Google Scholar provides full-text-access to all journal articles

Google Scholar provides, when available, links to websites where journal articles can be downloaded free of charge

7. You found an internet forum which provides relevant information. Is it allowed to use this information (properly cited) for your scientific presentation?

Eventually, this depends on the forum. There are scientific internet forums which have the same reputation as scientific journals

No, internet forums are by no means appropriate resources for your presentation, because they do not fulfil requirements for scientific resources

No, because there are no guidelines on how to cite internet forums. Therefore, forums cannot be used as scientific resources

8. Which are the features of a scientific internet forum?

The forum is provided by a reputable organization

Entries are achieved, so that the discussion can be retraced

Authors publish using their real names instead of pseudonyms

9. While searching for literature you came across a seven years old book. Using databases you could find several more recent journal articles. Which are the reasons to read the book first?

The book conveys probably a better overview of the topic and various research directions

Books are written only when knowledge is established

Journal articles often deal with specific aspects of an issue which might not be relevant for me

10. You are trying to find information concerning a specific subject. Which are appropriate approaches to identify search terms?

Summarizing the issue using a few sentences. The central concepts of the summary can be used as search terms

Finding synonyms for the central concepts, e.g. by brainstorming, or the use of a lexicon

Reading a relevant article and noting related concepts

*** 11. You are trying to find information concerning the influence of technologies in early ages. Which of the following queries do you consider helpful?**

"Technologies AND early ages"

"Personality influence false memories"

"Screens AND early ages"

*** 12. Why does the query "Technologies AND early ages" provide fewer results than the query "Technologies OR early ages"?**

Combining two search terms using AND restricting the results to entries associated with both terms. When combining the terms using OR, all the entries are found that are linked to one of the terms, or linked to both

More entries are associated with the word "OR" that with the work "AND"

"OR" leads to the inclusion of additional resources which would otherwise not be used

13. Which of the following statements is correct?

Searching the thesaurus can be done to

Identify subdisciplines of Psychology

Identify important scientists in a certain field

Find additional search terms

*** 14. Which of the following statements are correct?**

The SFX-Button located next to the results of a search engine can be used to

Find out whether a certain journal is available at your university library

Find out whether the journal article in question is available online for students of your university

Find out whether a certain book is available at your university library

15. Which criteria can be used to judge the quality of a book or a journal article?

……
……..

(0.33 for each of the following responses: is the publication peer-reviewed?, reputation of the author, reputation of the publisher, journal impact factor, publication year)

16. Which of the following problems can occur during the peer-review process?

None, therefore peer-review is the best solution

Reviewers might reject articles that contradict their own findings

Often it is not possible to find an adequate number of reviewers

17. Which reasons exist not to use the reputation of an author to judge the quality of a publication?

Qualified younger authors might get disadvantaged, because they did not have the chance to gather reputation

Unknown authors might also publish articles of quality which would be overlooked

The peer-review process should make sure that all articles fulfil certain standards, no matter who wrote them

18. Which statements about the order of authors of a publication are true?

Sometimes, the order is determined randomly

Often, those authors who contributed more to the study are listed first

Established authors are often listed last

19. Which statement is true?

"The reputation of a publisher is more important when evaluating the quality of

Journals, because the reputation of the publisher is more important than the Journal Impact Factor"

Monographs or edited books because there is no Impact Factor available for these publications"

20. Which options are available to find out about the reputation of a publisher?

Asking peers (e.g. colleagues)

Using information on Wikipedia

Asking the relevant contact person at your library

21. Which statement is true?

The Journal Impact Factor (JIF) indicates…

… how often articles published in this journal have been cited by other authors during a certain period of time

… how many libraries have subscribed to the journal

… the relevance ascribed to this journal by a group of experts

22. The Journal Impact Factor is not available at every institution due to license fees. Which options are feasible for students?

Asking their universities for reimbursement

Eigenfactor.org is an alternative available free of charge

The Journal Impact Factor values can be found on the websites of the journal

Attitudes Towards Research Scale (Georgiou, 2020)

Instructions: For each of the following statements, what is your level of agreement?						
	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1. Previous teaching experience is more important than the use of current research evidence.						
2. Teachers, in general, should not practice teaching based on current evidence because teaching is about people and students, not statistics.						
3. Teachers should decide based on their experience if and how they want to make use of current research findings.						
4. The judgment of esteemed colleagues offers a better basis than current research evidence.						
5. Experienced teachers should disregard research evidence when it conflicts with their intuition.						
6. Teaching based on current research evidence is a waste of time.						
7. There is no reason for me to implement EBT because it is just a fad that will pass with time.						

8. I know what is best for my students without examining the current research evidence.						
9. Teaching based on current research evidence ignores the "art" of teaching.						
10. My teaching experience influences how I judge evidence-based recommendations.						

Intention to Use EBT Scale (Al Zoubi, 2018)

Questions with * have been adapted.

Instructions: For each of the following activities, how often have you done the following in the past 6 months? **0 = never; 1 = one time or more**					
	Never	1 or 2 times	Almost every month	2 to 10 times a month	More than 10 times a month
1. Identify a gap in your knowledge related to a student situation (e.g. curricular adaptation, assessment, behaviour)?*					
2. Formulate a question to guide a literature search based on a gap in your knowledge?					
3. Effectively conduct an online literature search to address the question?					
4. Critically appraise the strengths and weaknesses of study methods (e.g. appropriateness of study design, recruitment, data collection, and analysis)?					

5. Critically appraise the measurement properties (e.g. reliability and validity, sensitivity and specificity) of standardized tests or assessment tools you are considering using in your practice?					
6. Interpret study results obtained using statistical tests and procedures (e.g. t tests, logistic regression?)					
7. Determine if evidence from the research literature applies to your patient's/client's situation?*					
8. Decide on an appropriate course of action based on integrating the research evidence, educational judgment, the student and the student's family preferences?*					
9. Continually evaluate the effect of your course of action on your student's outcomes?*					

Thank you for participating in our research!