Introduction. Many previous studies are increasingly rising the issue of teacher competences, specifically on content, didactics and technology. Those competences are considered as important aspects for successful teaching process in the classroom. Therefore, this study sheds light on the effects of gender, teaching experience, educational background, and school types on teachers' mathematical, didactic, and technological competences.

Material and methods. The research method is an online survey of 145 elementary school teachers in Riau province, Indonesia (March to April 2022). The questionnaire consists of 15 questions in three competences: “mathematics”, “didactics”, and “technology”. To evaluate the effect of gender, teaching experience, educational background, and the school type on teachers’ competences, the researchers used a non-parametric statistical analysis of the Mann-Whitney U test.

Results. The findings reveal that there were significant differences of teaching experiences (Asymp. Sig = 0.009, p<0.01) and school types (Asymp. Sig = 0.009, p<0.01) to teachers’ technological competence, also educational background to teachers’ mathematical (Asymp. Sig = 0.035, p<0.05) and didactic competences (Asymp. Sig = 0.012, p<0.05). However, only gender has no effect to any teacher competence.

Conclusion. Gender is the only factor that does not affect teacher competences. Meanwhile, other factors, teaching experience, educational background, and school type, affect at least one out of three teacher competences. Therefore, these influencing aspects need to be the attention of policy makers in preparing elementary school teachers.

Keywords: educational background, gender, school types, teacher competences, teaching experience

For Reference:
Introduction

Education is the fundamental building element of any civilization, promoting social mobility and preventing poverty [1]. It is the single most important investment a country can make to develop a wealthy, healthy, and egalitarian society. Furthermore, education technology provides significant logistical assistance for teaching and learning, and it serves as an access, dissemination, improvement, replacement, and automation tool [2].

The ever changing of advancement technology requires teachers to possess a qualified content, didactic, and technological skills in the teaching instruction. Teachers’ insufficient competences, particularly related to mathematics instruction will of course have influenced their didactic skill, specifically the ability of the mathematics pedagogical competence, including for elementary school level [3]. Teachers therefore should understand that the factors contributing to teaching and learning competence are complex and that, acquiring sufficient mathematical and didactic competence is crucial [4]. The awareness of having mathematical pedagogy is a prerequisite for a teacher which in turn enable them to observe, articulate, and interpret all of the classroom practice principles and make necessary measurements and decisions. Such awareness is related to teachers’ knowledge and competence which is rooted in the context of the actual classroom practice [5]. This implies that teacher knowledge affects their actions in the classroom [6].

In the era of the ever-changing technological evolution, the paradigm shifts in thoughts has caused the development of potentials which result in subsequent impacts on teachers’ pedagogical competence. Therefore, the appropriate measurements of teacher competences, including mathematical, didactic, and technological skill, are imperative to teacher education. This competence is regarded as critical since it helps decision-making processes and other associated abilities required to select appropriate technology to develop content learning [7]. Similarly, this understanding can assist instructors in avoiding the use of improper technology to teach subject that has been confined or hampered in certain situations using that technology. Similarly, gaining technological expertise enables instructors to obtain a thorough grasp of the affordances and restrictions of technology in the classroom. Furthermore, teachers' technical proficiency allows them to successfully develop courses and activities that are equipped with technology to aid in their attempts to understand the subject information. Didactic activities that enhance learning, such as simulations given via technology aids, assist teachers in practicing a wide range of activities [8].

As recommended by Lin et al. [9], further studies on teacher competences have led to more research efforts on issues, such as gender and teacher exposure to technology. By so doing, teachers’ knowledge about the integration of educational technology in the instructional process can improve which in turn provide benefits for student learning in contemporary educational development. Therefore, in this study, the researchers are interested in investigating some issues on gender, teaching experience, educational background, and types of school to compare elementary teachers’ mathematical, didactic, and technological competence. It is expected that a deep and comprehensive analysis can give insight into the complex factors affect teacher competences. Considering this introduction, the main aim of the present study is to investigate the similarities and differences teachers’ mathematical, didactic, and technological competences from those four variables.
In the following section, the researchers review some previous studies on teacher competences, and gender issue, teaching experience, educational background, and type of school in mathematics education. The method section presents information on participants, research design, instrument, and data analysis. After that, the researchers present the results of the study based on the four variables, and hypothesis test. Finally, the discussion seeks to explore the results of this study to teachers’ mathematical, didactic, and technological competences, and also the implication of this study for further teachers’ professional development.

**Literature Review**

**Teachers’ Mathematical, Didactic, and Technological Competences**

Teaching necessitates fundamental skills, subject knowledge, and general pedagogical abilities [10]. Content and pedagogy are indistinguishable parts of the same body of knowledge. The hallmark of teaching is content knowledge. Content knowledge is pedagogical knowledge, which goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge for teaching [11]. Mathematical knowledge and abilities utilized in situations other than instruction are referred to as content knowledge [12]. Teaching requires the same level of mathematics understanding as other adults. Teachers must be familiar with all the mathematics included in the curriculum, as well as a few years of further study in college mathematics. Teachers must learn to use their knowledge base as a foundation for decisions and actions [10].

Teacher competences are categorized into three main components: content, pedagogy, and didactics [13]. Didactics is defined as concepts and ideas related to the goals and practice of mathematics education on the one hand, and general pedagogy and epistemology on the other [13]. Didactic knowledge is concerned with the conditions and mechanisms of mathematics instruction that requires the use of teachers’ mathematical knowledge in teaching [14]. While, mathematical knowledge through the use of technology has an impact on the teaching of mathematics [15].

Mathematical, didactic, and technological competence is severely important and are closely related to each other for every teacher. Mathematical skill corresponds to the ability of teachers using procedures and theories in solving mathematical problems, and didactic skill relates to how they can use their mathematical skill in learning and teaching mathematics to students [16]. Technological skill, on the other hand, refers to understanding of numerous technologies, ranging from low-tech technologies like pencil and paper to digital technologies like the Internet, digital video, interactive whiteboards, and software programs [17]. So that it means mathematical, didactic, and technological competences or skills refers to the ability of teachers to use mathematical procedures and theories in learning and teaching mathematics, and also to have various technological knowledge to support students’ learning. On this study, the researchers focused on comparing elementary teachers’ view of their mathematical, didactic, and technological competences.

**Gender Differences in Mathematics Education**

Gender issues in mathematics education have gained academic attention in several nations over the last three decades, with the result that male success in mathematics is much higher than female accomplishment [18]. However, based on a large scale study (TIMSS
results from 2011) on the investigation of gender differences in mathematics, and sciences conducted by Reilly et al. [19] found that although there were no general worldwide gender disparities, although females outperformed boys in mathematics and scientific proficiency among non-OECD countries. Boys are regarded to have more positive views about math and science than girls, who expressed lower self-efficacy beliefs [19]. Similarly, in other nations, the traditional gender inequalities in mathematics success are reversed, with females outperforming their male colleagues [18].

In many cases, teachers' gender is often a strong predictor of student achievement [18]. The attitudes of male and female teachers regarding numbers and operations vary dramatically. Male teachers thought this issue was more essential than female teachers did. Second, gender disparities in student views regarding the difficulty of the selected topics have been widely noted. Finally, gender disparities in teacher perceptions mirror gender differences in student beliefs regarding the significance and difficulty of mathematical topics [20]. Female teachers, on the other hand, were found to be better communicators in the classroom and to have better teaching practices than their male counterparts [21]. In this study, the researchers focused on the comparison based on gender of the issues on mathematical, didactics, and technological competences.

**Teaching Experiences**

Teachers’ ability to present the appropriate math questions in the classroom can determine the direction and success of the learning process experienced by students. However, in this respect, presenting a good question, is closely connected to the suitability of the context and content of mathematics, requires long practice and experience for a teacher [22]. Another opinion states teachers’ experiences in instruction also shape their commitment and retention in the profession [23].

The longer is the teaching experience, the higher is the performance, and the more experience the teachers have, the more competence they will have. This teaching experience includes the length of time that a teacher has taught and the participation in the trainings that the teacher has participated in [24]. All these experiences will increase the knowledge and skills of teachers. On this study, the researchers focus on comparing teachers’ mathematical, didactic, and technological competences based on their experiences teaching primary school students at school.

**Educational Background**

Attachment to the Regulation of the Ministry of National Education No. 16/2007 dated May 4, 2007 about standards of academic qualification and teacher competence [25], a standard of academic qualifications of teachers at primary school, or the other equivalent level is a minimum educational academic qualification of diploma four (D-IV) or bachelor degree (S1) in the field of primary school education (D-IV/S1 PGSD/PGMI in the Indonesian term) or psychology obtained from an accredited study program, while non-elementary teachers (study field teachers) are placed for the next level in accordance with the academic qualifications of the field of study each other's expertise.

The ideal elementary school teacher is a teacher whose undergraduate educational background that is in accordance with the field of elementary school, one of which is a teacher with a PGSD (Primary Teacher Education) major graduate. Meanwhile, teachers with non-PGSD (educational or non-educational) undergraduate backgrounds should ideally teach or carry out tasks according to their skills in their respective fields according
to the scientific field pursued [26]. In this study, researchers focus on comparing elementary teachers’ mathematical, didactic, and technological competences based on their academic background.

### Types of School for Teaching

Following a thorough review of various significant research on the performance of public school and private school instructors, it is clear that teachers’ performance in private schools is considerably more apparent than those in public schools [27]. Private schools, on the other hand, improved pupils’ performance as measured by standardized tests of verbal and quantitative skills. It was also argued that ordinary student presentation in private schools was superior to that in public schools [28].

The level of education in public schools is below par, and instructors are not well qualified [27]. So, parents with high income will tend to send their kids to private schools. In this study, the researchers focus on comparing teachers’ mathematical, didactic, and technological competences based on school types.

### Material and Methods

#### Research Design

This study used a survey method in technology-based data collection [29]. In practice, the researchers administered a test for observing mathematical, didactic, and technology competences of elementary school teachers. The researchers administered the instruments and requested teachers to answer the fifteen items of questions. The mathematical, didactic and technological competences of elementary school teachers was observed through questionnaires using a Likert scale (1-5) which is composed of 5 items about mathematical competences, 5 items about didactic competences, and 5 items about technological competences.

The instruments of mathematical and didactic competences were developed based on the standard body, curriculum, and educational assessment of the ministry of education, culture, research, and technology No. 008/H/KR/2022 regarding learning outcomes in the independent curriculum, while learning materials on mathematics subjects in each basic education lesson are packaged through the study of numbers, algebra, measurement, geometry, data analysis and probability [30]. The theme about number deals with numbers as number symbols, number concepts, arithmetic of numbers, and relations between various number operations in visual representation sub elements, properties, sequences and operations (item 1 and 6). The theme of algebra discusses non-formal algebra in the form of symbols, images, and up to formal algebra in the form of letter symbols that represents a certain number in the sub element equations and inequalities, relations and patterns numbers, as well as ratios and proportions (item 2 and 7). The theme of measurements discusses about measurement quantity, how to measure certain amount, and prove the principle or theorem about a certain number of sub elements measurement of geometric and non-geometric quantities (item 3 and 8). The theme of geometry is about various flat shape and build a good space inside Euclidean and Non-Euclidean studies and their characteristics in sub-elements of flat and solid geometry (item 4 and 9). Finally, the theme about data analysis and probability discussed about the meaning of data, types of data, processing data in various forms of representation, and analysis quantitative data related to concentration.
and dispersion data and the opportunity for the emergence of a data or event specific data sub-elements and their representations, and uncertainty and opportunity (item 5 and 10).

Meanwhile, the instrument of technological competences was compiled based on research conducted by Fogarty et al. [31] which is related to skill of computers (Item 11), skill of computer applications in general (item 12), skill of computer applications such as GeoGebra in mathematics learning (item 13), the use of learning management systems in mathematics learning (item 14), and skills in designing learning using computer applications for learning mathematics (item 15).

**Sample and Data Collection**

The participants of this study consisted of 145 elementary school teachers from Riau province, Indonesia. Table 1 presents the background of participants.

Table 1

<table>
<thead>
<tr>
<th>Teacher background</th>
<th>Demography Character</th>
<th>Number of Participant</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>37</td>
<td>25.5%</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>108</td>
<td>74.5%</td>
</tr>
<tr>
<td>Teaching experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td></td>
<td>43</td>
<td>29.6%</td>
</tr>
<tr>
<td>6-10 years</td>
<td></td>
<td>24</td>
<td>16.5%</td>
</tr>
<tr>
<td>11-15 years</td>
<td></td>
<td>22</td>
<td>15.2%</td>
</tr>
<tr>
<td>16-20 years</td>
<td></td>
<td>23</td>
<td>15.9%</td>
</tr>
<tr>
<td>21-25 years</td>
<td></td>
<td>13</td>
<td>9%</td>
</tr>
<tr>
<td>26-30 years</td>
<td></td>
<td>11</td>
<td>7.6%</td>
</tr>
<tr>
<td>&gt; 30 years</td>
<td></td>
<td>9</td>
<td>6.2%</td>
</tr>
<tr>
<td>Educational background</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary Education</td>
<td></td>
<td>94</td>
<td>64.8%</td>
</tr>
<tr>
<td>Non-Elementary Education</td>
<td></td>
<td>51</td>
<td>35.2%</td>
</tr>
<tr>
<td>Type of school</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public school</td>
<td></td>
<td>117</td>
<td>80.7%</td>
</tr>
<tr>
<td>Private school</td>
<td></td>
<td>28</td>
<td>19.3%</td>
</tr>
</tbody>
</table>

Data collection in the form of questionnaire was distributed using Google Forms in March to April 2022. The participants were reached via WhatsApp group and sent a link to the questionnaire. The questions of teachers’ mathematics, didactic, and technological competence were given at the time the questionnaires completion.

**Analyzing of Data**

The questionnaire data was statistically analyzed using the SPSS statistical software package, which included descriptive and inferential statistics. This study's analysis included the general mean, standard deviation, range, minimum, and maximum. The criteria for mathematical, didactic, and technological competences are presented using the overall mean in Table 2.

The Mann-Whitney U test was employed in the statistical analysis of the data. It is used to determine if there are differences in the dependent variable between two independent groups. Because the values in the sample do not match the normal or t-distribution, the Mann-Whitney U test is utilized [32]. Furthermore, it gives a more adaptable test tool. Non-parametric tests differ from parametric test in that the model structure is not beforehand
stated but was developed from the data. The word nonparametric does not indicate that such models are wholly devoid of parameters, but rather that the quantity and type of the parameters are adjustable and not predetermined. As a result, nonparametric tests are sometimes known as distribution free tests. The Mann Whitney U test can be used to address the researchers' inquiries about the differences between his groups [33]. Mann-Whitney U test assumptions that are assumed: (a) the two studied groups must be picked at random from the target population; and (b) each measurement or observation must belong to a separate participant. (c) The scale of data measurement is ordinal or continuous [33].

### Results of Descriptive Statistics

The descriptive statistical analysis is a statistical technique that serves to provide an overview of the data obtained from the sample without further analysis to draw conclusions [34]. The descriptive analysis yielded frequencies relating to the respondents' gender, teaching experience, educational background, and school type to their questionnaire performance in terms of the overall mean, standard deviation, range, minimum, and maximum. The questionnaire was completed by 145 people (n = 145). Most of them (108) are female. The majority (43) have 1-5 years of teaching experience or more. In terms of education, more than half of them (94) are elementary school graduates. This sort of school was attended by more than half of the students (117). The questionnaire results derived from the investigation of primary teachers' performance (n = 145).

The respondents’ overall mean score on the questionnaire is M = 10.44 as shown in Table 3 below, which accounts for the teachers' mathematical, didactic, and technological competences who participated in this research. The descriptive statistics present gaps in the assessment competences base on the study sample for each individual standard (Table 3).

### Total questionnaire respondents and overall means

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>145</td>
<td>3.60</td>
<td>1.40</td>
<td>5.00</td>
<td>3.71</td>
<td>0.72</td>
</tr>
<tr>
<td>Didactics</td>
<td>145</td>
<td>3.60</td>
<td>1.40</td>
<td>5.00</td>
<td>3.71</td>
<td>0.71</td>
</tr>
<tr>
<td>Technology</td>
<td>145</td>
<td>4.00</td>
<td>1.00</td>
<td>5.00</td>
<td>3.02</td>
<td>0.90</td>
</tr>
</tbody>
</table>
Overall, for the three above components, the total mean score is $M = 10.44$, for two competences (i.e., mathematics and didactics) with a mean score $3.71$ (very satisfactory category), and for one competence (i.e., technological), with the mean score of $3.02$ (satisfactory category). The results of the study show that generally the teachers’ have the lowest technological competence, which had an overall mean score of $M = 3.02$; $SD = 0.90$.

Teacher Competences from Gender Perspectives

Table 4 illustrates the mean test scores, standard deviations, and Mann-Whitney U test results of teachers’ mathematical, didactic, and technological competences based on gender. The mean scores of male teachers’ competences ($M = 3.62$) which is higher than female teachers’ competences ($3.43$). The striking difference lies on the technological competence ($D = 0.33$), but both groups have lower mean scores in technological competence compared to the others. Teachers’ technological competence also has the highest standard deviation compared to the others. In addition, male teachers’ standard deviation is also greater compared to female teachers. However, there is no significant differences between male and female teachers’ competences of those variables.

Table 4
Mean test scores, standard deviations, and Mann-Whitney U test results of teachers’ knowledge domains (n = 145, male = 37, female= 108)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mann-Whitney U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Math</td>
<td>3.77</td>
</tr>
<tr>
<td>Didac</td>
<td>3.83</td>
</tr>
<tr>
<td>Tech</td>
<td>3.26</td>
</tr>
</tbody>
</table>

Teacher Competences from Teaching Experiences

Table 5 presents the mean test scores, standard deviations, and Mann-Whitney U test results of teachers’ mathematical, didactic, and technological competences based on their teaching experiences. The mean scores for those whose teaching experience of 1-5 years ($M = 3.63$) achieved the highest, and the lowest is those with the teaching experiences of $> 30$ years ($3.21$). Each group has the lowest technological competence ($2.90$) compared to the others. There is a tendency of the more teachers’ teaching experiences, the less their technological competence. In addition, there is only a significant difference of teachers’ technological competence based on their teaching experiences.

Teacher Competences from Educational Background

Table 6 describes the mean test scores, standard deviations, and Mann-Whitney U test results of teachers’ mathematical, didactic, and technological competences based on educational background. The mean score of teacher competences from elementary education ($M = 3.55$) is higher than non-elementary education ($M = 3.35$). The striking difference is observed in the didactic competences, but both groups have lower mean scores of technological competences compared to the others. Teachers’ technological competence also has the highest standard deviation compared to the others. In addition, there is a significant difference of teachers’
mathematical and didactic competences based on their educational background. This means that teachers with elementary educational background consider their mathematical and didactic competences better than non-elementary educational background.

Table 5

Mean test scores, standard deviations, and Mann-Whitney U test results of teacher competences (n = 145, 1-5 years =43, 6-10 years = 24, 11-15 years = 22, 16-20 years = 23, 21-25 years = 13, 26-30 years= 11, >30 years = 9)

<table>
<thead>
<tr>
<th>Teaching experience</th>
<th>1-5 years</th>
<th>6-10 years</th>
<th>11-15 years</th>
<th>16-20 years</th>
<th>21-25 years</th>
<th>26-30 years</th>
<th>&gt; 30 years</th>
<th>Mann-Whitney U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>Mean</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3.74</td>
<td>0.68</td>
<td>3.56</td>
<td>0.81</td>
<td>3.74</td>
<td>0.81</td>
<td>3.63</td>
<td>0.62</td>
</tr>
<tr>
<td>Didactics</td>
<td>3.74</td>
<td>0.65</td>
<td>3.50</td>
<td>0.88</td>
<td>3.81</td>
<td>0.74</td>
<td>3.61</td>
<td>0.67</td>
</tr>
<tr>
<td>Technology</td>
<td>3.33</td>
<td>0.76</td>
<td>3.14</td>
<td>1.02</td>
<td>3.10</td>
<td>0.91</td>
<td>2.60</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Table 6

Mean test scores, standard deviations, and Mann-Whitney U test results of teacher competences (n = 145, elementary educational = 94, non-elementary educational= 51)

<table>
<thead>
<tr>
<th>Educational background</th>
<th>Elementary Education</th>
<th>Non Elementary Education</th>
<th>Mann-Whitney U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3.80</td>
<td>0.75</td>
<td>3.53</td>
</tr>
<tr>
<td>Didactics</td>
<td>3.83</td>
<td>0.69</td>
<td>3.49</td>
</tr>
<tr>
<td>Technology</td>
<td>3.01</td>
<td>0.90</td>
<td>3.02</td>
</tr>
</tbody>
</table>

Teacher Competences from Types of Schools

Table 7 presents the mean test scores, standard deviations, and Mann-Whitney U test results of teachers’ mathematical, didactic, and technological competences based on types of schools. In general, the mean score of teacher competences from private school is not significantly differences from public school. Teachers from public school consider their didactic competence (M = 3.73) is higher than those of private school (M = 3.62). On the other hand, teachers from public school had lower technological competence (M = 2.99) than teachers from private school (M = 3.12). Teachers’ technological competence also has the highest standard deviation compared to the other aspects. However, there is only a significant difference of teachers’ technological competences between public and private schools.

Discussion

The aim of this study is to investigate and compare teachers’ mathematical, didactic, and technological competence based on gender, teaching experiences, educational background, and school types.
Table 7
Mean test scores, standard deviations, and Mann-Whitney U test results of teacher competences (n = 145, public school = 117, private school= 28)

<table>
<thead>
<tr>
<th>Type of school</th>
<th>Public school</th>
<th>Private school</th>
<th>Mann-Whitney U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Mathematics</td>
<td>3.71</td>
<td>0.73</td>
<td>3.71</td>
</tr>
<tr>
<td>Didactics</td>
<td>3.73</td>
<td>0.72</td>
<td>3.62</td>
</tr>
<tr>
<td>Technology</td>
<td>2.99</td>
<td>0.90</td>
<td>3.12</td>
</tr>
</tbody>
</table>

Concerning teachers’ mathematical, didactic, and technological competences referring to gender, this study shows that male teacher is higher than female teacher for all three areas. In terms of mathematics and didactic competences, there is no significant difference between male and female teachers. This study was in line with TIMSS results from 2011 [19], but it does not support the finding of female teachers consider their competences higher than female teachers although they have better instructional practices in the classroom [21].

Teachers’ teaching experience affects their technological competence, but not their mathematical and didactic competences. Teachers’ less teaching experiences consider their technological competences is higher than those who have more teaching experiences. This is because novice teachers can quickly learn and use digital technology. They placed a substantially higher importance on the benefits of employing technology in teaching in terms of improving learning [35]. In addition, they get more experience in using digital technology during their training in teacher education compared to teachers who have been teaching in schools for a long time.

Type of schools also affects teachers’ technological competences. Teachers from private schools have higher technological skill than those of public schools. This finding supports a previous study conducted by Khan et al. [27] that teachers from private school are better that teachers from public schools. In addition, Khan et al. [36] said that the performance rating system in private schools is more effective than in public schools that could affect teaching performance of the teachers. Besides, the pandemic covid-19 also affects the teaching methods in both schools, and especially teachers from private schools are more prepared to use technology.

Teachers’ mathematical and didactic competences have significant different referring to the educational background. Teachers graduated from elementary education considered their mathematical and didactic competences better that those are not from elementary education background. This finding indicate that educational background is an important thing to consider in determining teacher readiness to teach, including in elementary education, and it is in line with the regulation of the Ministry of National Education [25].

Conclusion

Examining Teachers’ mathematical, didactic, and technological competences are complex, and this study therefore is more complicated than the previous studies. In this
study, the researcher investigated teacher competences using self-evaluation method and had discovered evidence.

In terms of gender, teachers’ mathematical, didactic, and technological competences have no significant different in spite of the fact that male teachers’ competences is better than female teachers. However, there is a significant difference of teachers’ technological competences referring to teaching experiences and school types as well as teachers’ mathematical and didactic competences based on the educational background. Thus, it can be concluded that teaching experiences, educational background, and school types are among factors that can affect elementary teachers’ professional development.

**Recommendations**

This study investigates teachers’ mathematical, didactic, and technological competences using the approach of self-evaluation method, and this approach is needed to be further developed and implemented. It is recommended to conduct the future study to combine between testing and self-evaluating teacher competences.

**Limitations**

The number of participants in this study is limited because this study only was conducted in one province in Indonesia. Thus, further study is needed to collect data from several regions in Indonesia, and there is still possibility to extend the data collection from other countries.

**Acknowledgements**

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**REFERENCES**


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