Teaching Strategies and Technical Skills in Online Distance Learning

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Abstract

The research was entitled "Teaching Strategies and Technical Skills in online Distance Learning". This study aimed to determine the effects of online teaching strategies in the acquisition of technical skills of grade 7 learners in Caritas Don Bosco School (CDBS). Specifically, it sought answers to the following questions; What is the profile of the respondents as to; age and sex, What is the level of teaching strategies in terms of; adaptive teaching, computational thinking, learning by doing, visualization and analogies, What is the level of technical skills among grade 7 learners with regards to; calculation, critical thinking, performance of practical tasks and spatial visualization, Do the teaching strategies have significant difference according to their gender, Do the technical skills have significant difference according to their gender, Is there a significant relationship between the teaching strategies and the technical skills of grade 7 learners in Caritas Don Bosco School.

The study adopted the quantitative descriptive research design and made use of survey questionnaire. A total on one hundred and twenty-four (124) learners of Caritas Don Bosco School for the school year 2021-2022 were used as respondents and selected through purposive sampling. Data were collected and analyzed through Mean, Median, Standard Deviation and Pearson r correlation tools.

Findings revealed that, adaptive teaching strategy has strongly correlated among all the technical skills and interpreted as significant. The answers demonstrated that adaptive teaching, computational thinking, learning by doing, visualization, and analogies play a part in the learners' acquisition of technical skills in online distance learning. As a result, it is clear that learners gained the fundamental abilities. The null hypothesis that there is no significant difference between gender of the respondents and the teaching strategies was rejected. However, the null hypothesis stating that is no significant difference between gender of the respondents and the technical skills in online distance learning was accepted. The result shows that there is a significant relationship between the teaching strategies and the acquisition of technical skills in online distance learning among grade 7 learners in CDBS. It is recommended that learners should use their preferred learning styles in the execution of practical activities. Encourage them to devote more time to practicing practical skills. Technical faculty members who teach technical subjects are advised to continue to apply adaptive teaching strategies in the coming school years and to improve afterwards. Teachers are advised to evaluate, create and deliver differentiated solutions to meet the requirements of the students. And lastly, give reference to school principal and officials to demand that technical faculty members engage students in more laboratory and hands-on activities. Simultaneously, consider feasible teaching strategies to apply when the pandemic is over and the shift to traditional face-to-face classrooms occurs.

Based on the findings of the study the following conclusions was drawn: The difference in level of online teaching strategies in terms of computational thinking, learning by doing, visualization and analogies as evaluated by male and female respondents appeared significant. However, the adaptive teaching as teaching strategy appeared not significant. Therefore, the null hypothesis was partially rejected. There was a significant difference on level of technical skills as assessed by male and female respondents in terms of critical thinking.

This implied that both male and female respondents have the same view on the level of critical thinking as an acquired technical skill. On the other hand, a not significant analysis was obtained for level of calculation skills, performance on practical tasks, and spatial visualization according to gender. Therefore, the null hypothesis was partially accepted. The null hypothesis that there is no significant relationship between teaching strategies and the acquisition of technical skills in online distance learning among Caritas Don Bosco School grade 7 learners was rejected completely. The result claims that teaching strategies highly affect the acquisition of skills among learners, especially in their foundation years. Therefore, teaching strategies and technical skills are inextricably linked to one another. Based on the findings, the researcher made the following recommendations: For learners to be able to use their preferred learning styles in the execution of practical activities. Encourage them to devote more time to practicing practical skills. For technical faculty members who teach technical subjects to continue to apply adaptive teaching strategies in the coming school years and to improve afterwards. Teachers and educational developers can use this tool to assess the present teaching strategies used by teachers in an online setting. May create and deliver differentiated solutions to meet the requirements of the learners. For the school principal and officials to demand that technical faculty members engage learners in more laboratory and hands-on activities. Simultaneously, consider feasible teaching strategies to apply when the pandemic is over and the shift to traditional face-to-face classrooms occurs.

1. Main text

(10 pt) Here introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 10 pt. Here follows further instructions for authors.

With the advent of COVID-19 pandemic, numerous private schools in Laguna shifted the learning delivery modality into Online Distance Learning (ODL). Caritas Don Bosco School is one of them, which was greatly challenged by the teaching and learning process most especially in skill-based subject areas. Teachers are not physically present to monitor and guide learners as they progress through the performance of tasks. Supervision was done through ZOOM video conferencing showing only on small screen and lacking the whole picture of the progress. It is significant that learners were able to experience the simulation of the real-world work environment, use specified tools and equipment such as T-square, triangles, templates, 3D models, drawing table, etc. in the laboratory particularly the grade 7 learners who encountered the subject for the very first time. Based on several studies, even the tertiary education learners find it hard to visualize concepts without formal hands-on experiences (Ghaemi and Potvin, 2021). Alternatives in doing laboratory works may apply at home, however, the true value and quality of learning experience seems unclear. Faculty surveys also revealed that teaching hands-on or experimental lab types of subjects are difficult if it is done online.

Skill is defined as 'an organized pattern of mental and/or physical activity' and consists of a 'knowledge' component and a 'doing' component. To perform a skill, the learner should be aware of what needs to be done and the order in which it needs to be done (Gould, 2012). Technical Drafting is a skill-based learning subject that emphasizes the acquisition of technical skills and other capabilities by the learner through hands-on activities until they become proficient in the process and can perform when required (Gimba 2011).

There is a growing national cognizance of the importance of better preparing the high school learners to be skilled and equipped in order to be globally competitive. It was supported by the DepEd order No. 67, s. 2012, Enclosure no. 2, Guidelines in the Implementation of Technology and Livelihood Education in Public and Private schools which stated that the Tech-Voc based TLE is designed based on Training Regulations of

TESDA which focuses on technical skills development.

There is a need to see if these skills can be learned online, especially in the exploratory years of grade 7 learners of Caritas Don Bosco School. Hence, this study hoped to identify the potential effects of online distance learning strategies on learners' performance and adjustment once the pandemic had passed and the mode of learning had returned to the regular face-to-face setting.

Nomenclature	
A	radius of
B	position of
C	**further nomenclature continues down the page inside the text box**

1.1. Structure

For this Procedia the files must be in MS Word format only and should be formatted for direct printing. Figures and tables should be embedded and not supplied separately. Please make sure that you use as much as possible normal fonts in your documents. Special fonts, such as fonts used in the Far East (Japanese, Chinese, Korean, etc.) may cause problems during processing. To avoid unnecessary errors you are strongly advised to use the 'spellchecker' function of MS Word. Follow this order when typing manuscripts: Title, Authors, Affiliations, Abstract, Keywords, Main text (including figures and tables), Acknowledgements, References, Appendix. Collate acknowledgements in a separate section at the end of the article and do not include them on the title page, as a footnote to the title or otherwise.

Bulleted lists may be included and should look like this:
- First point
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1.1 Structure

Online Distance Learning has gone through three pedagogical approaches: Cognitive-behaviorism, social-constructivism and connectivism. They defined Cognitive-Behaviorist (CB) models as the first generation of individualized distance education. Also enabling huge numbers of learners to get education at minor costs than traditional education, it also provided a supreme access and student freedom (Daniel, as cited in Anderson and Dron, 2011). It is believed to be related to this study in determining how learners perceive, learn, think, and make decisions towards mental activities without direct contact between teachers and peers.

Learning is defined as a personal construct by Social Constructivism Theory, which is a fabrication of the learners' interactions with other members present in the classroom. These members can be classmates at the same stage of learning or more knowledgeable individuals like teachers or special guests invited into the class. Interactions with working professionals are authentic learning moments in this case, just as much as the real-world subject matter introduced by the teacher at the start of a lesson, Rannikmäe et al., 2020).
Although the terms 'constructivism,' 'constructivist,' and other similar terms were introduced into the psychological lexicon in the second half of the twentieth century, the guiding perceptions of constructivism existed much earlier, Pritchard and Woollard (2010).

Siemens and Conole (2011) emphasized that the first decade of the twenty-first century saw incredible
The connectivism approach focuses on both the learning process and what has been learned. At a time when open and distance learning resources or environments are becoming more popular, the quality of the information learned and the importance of converting the information into a knowledge process has made the connectivism approach more important for Online Distance Learning (ODL).

The study is based on the theories, which emphasize the learners' autonomy in making their own judgments without the need for guidance or supervision. Learners' personal and authentic learning is also emphasized in this theory, as learners who have had the same educational experience may not have the same learning outcomes. Furthermore, the value of the learning processes and what has been learned is reflected in this work. In this study, learning is said to be crucial due to distant setting. However, these changes have been made by incorporating market-available virtual learning resources and employing innovative and cutting-edge pedagogical practices to determine individual progress of learner.

Conceptual framework
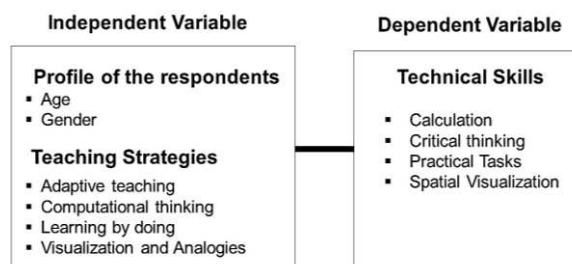
1.2. Tables

All tables should be numbered with Arabic numerals. Headings should be placed above tables, left justified. Leave one line space between the heading and the table. Only horizontal lines should be used within a table, to distinguish the column headings from the body of the table, and immediately above and below the table. Tables must be embedded into the text and not supplied separately. Below is an example which authors may find useful.

Table 1. An example of a table

An example of a column heading	Column A (t)	Column B (T)

And an entry	1	2
And another entry	3	4
And another entry	5	6

Level of Teaching Strategies in Online Distance Learning

With our current situation, online distance learning is one way to provide continuous learning. Thus, teachers should be equipped with online teaching strategies to ensure learners learning in this learning modality

Table 1. Level of Teaching Strategies in terms of Adaptive Teaching

The online teaching strategies based on Adaptive *Teaching….*	Mean	SD	Remarks
*…u*ses traditional methods of teaching during teaching and learning of technical drawing.	4.16	0.85	Agree
*…ha*s discussion and lecture methods of teaching which are often adopted by most technical teachers during technical drawing lesson.	4.15	0.83	Agree
*…*give home work in technical drawing.	3.90	1.09	Agree
*…ha*s several objects that are used by the technical teacher for illustration while teaching technical drawing.	4.05	0.99	Agree
*…u*ses digital application and tools while teaching.	4.33	0.88	Strongly Agree
Grand Mean	**4.12**		**High**

Table shows that the respondents strongly agree that the teachers used digital application and tools while teaching which attained the highest (M=4.33, SD=0.88This further means that respondents recognized the teacher's adaptive strategy in teaching.

Table 2. Level of Teaching Strategies in terms of Computational Thinking

The online teaching strategies based on *Computational Thinking….*	Mean	SD	Remarks
*…*gives complex and situational problem during the instruction.	3.98	0.92	Agree
*…ha*s ample patterns and process given.	4.48	0.79	Strongly Agree
*…ha*s ample time given in solving problems such as the conversion of units and identifying the measurement of an object.	4.13	0.95	Agree
*…ha*s various objects/drawings used to identify specific similarities and differences among problems to work.	4.28	0.79	Strongly Agree
*…*gives guide questions and procedures during the instruction.	4.25	0.93	Strongly Agree
Grand Mean	**4.23**		**Very High**

As shown in the results above, the grand (M=4.23) endorsed computational thinking as a teaching

strategy in an online distance learning environment interpreted as very high level. This entails that the method allows students to take a complex topic, comprehend it, and propose alternative solutions.

Table 3. Level of Teaching Strategies in terms of Learning by Doing

Based on Learning by Doing teaching strategy, the ….	Mean	SD	Remarks
…teachers demonstrate the proper use of tools and equipment using an overhead camera during the class.	4.27	0.97	Strongly Agree
…teachers demonstrate the steps/procedure in details.	4.25	0.84	Strongly Agree
…teachers explain and show exactly how to do things during the instruction.	4.25	0.86	Strongly Agree
…teacher's feedback was given during and after the assessment.	3.98	1.03	Agree
*…recorded video of the steps is used b*y the teachers and posted to the google classroom as learning material/tutorial.	4.62	0.71	Strongly Agree
Grand Mean	**4.28**		**Very High**

The result above reveals that learning by doing as a teaching strategy in online distance learning was at very high level supported by the grand (M=4.28). This means that the teachers were able to implement actual learning experiences based on concepts as perceived by the respondents.

Table 4. Level of Teaching Strategies in terms of Visualization and Analogies

Based on Visualization and Analogies teaching *strategy* ….	Mean	SD	Remarks
*…t*he teachers showed different mental rotation activities/drills.	4.17	0.94	Agree
*…t*he teachers made use of 3D models in their instruction.	3.78	1.10	Agree
*…t*he teachers used digital application and website such as sketchpad.io and procreate to visualize details of the object.	3.91	1.10	Agree
*…t*he teachers used actual drawing tools such as triangle and T-square.	4.44	0.83	Strongly Agree
*…t*he teachers made use of color and letter representation in comparing views and/or phases of an object.	4.12	0.91	Agree
Grand Mean	**4.08**		**High**

The grand (M=4.08) interpreted as high level strongly supports visualization and analogies as a teaching technique in an online distance learning scenario, as shown in the results above. This suggests that teachers were able to employ the concept of generating mental representations of something based on the respondents' perceptions.

Level of Technical Skills Among Grade 7 Learners

In an online distance learning setting, acquisition of skills should not be compromised. Thus, quality education in areas such as technical drafting should be also be attained. In this study, the level of technical skills in online distance learning was described in terms of calculation, critical thinking, performance of practical tasks and spatial visualization which was determined by the weighted mean and standard deviation.

Table 5. Level of Skills among Grade 7 Learners in terms of Calculation Skills

Based on the practice of *Calculation skills….*	Mean	SD	Remarks
I identify the different units of measurement such as centimeter and inches.	4.11	1.06	Agree
I measure the different dimensions of an object (height, length, width).	3.97	1.03	Agree
I scale objects into an enlarge and reduce size using the given formula.	3.86	1.00	Agree
I convert different units of measurement such as inches to centimeter, etc.	3.79	1.18	Agree
I use centimeter ruler for measurement.	4.23	0.98	Strongly Agree
Grand Mean	**3.99**		**High**

The result above shows that calculation skills as technical skills in Technical Drafting was at high level supported by the grand (M=3.99). This signifies those learners were able to calculate answers to mathematical problems and mensuration using arithmetic processes.

Table 6. Level of Skills among Grade 7 Learners in terms of Critical Thinking Skills

With *Critical Thinking Skills ….*	Mean	SD	Remarks
I examine problems closely.	3.87	0.95	Agree
I have a sense of curiosity.	4.00	0.94	Agree
I clearly define a set of criteria for analyzing ideas.	3.66	0.96	Agree
I reject information that is incorrect or irrelevant.	3.86	1.02	Agree
I understand and interpret drawing.	4.06	0.97	Agree
Grand Mean	**3.89**		**High**

The grand (M=3.89) supports the conclusion that critical thinking as a technical skill in Technical Drafting is at a high level. This indicates that learners were able to evaluate facts and circumstances before making a decision.

Table 7. Level of Skills among Grade 7 Learners in terms of Performance of Practical Tasks

Based on the *Performance of Practical Tasks* ….	Mean	SD	Remarks
I have developed useful skills in this subject.	4.00	1.04	Agree
I find it easy to collaborate with my peers in doing the tasks.	3.56	1.17	Agree
I am able to use and manipulate the tools I have at home.	4.09	0.92	Agree
I can create part drawings and construct geometrical images	3.90	1.02	Agree

I can draw with different line weights	3.84	1.05	Agree
Grand Mean	**3.88**		**High**

The result above supports the conclusion that performance of practical tasks as technical skills in Technical Drafting was at high level supported by the grand (M=3.88). This signifies that learner were able to put ideas into practice through practical tasks.

Table 8. Level of Skills among Grade 7 Learners in terms of Spatial Visualization

Based on the practice of Spatial Visualization skills ….	Mean	SD	Remarks
I easily determine the position of the object.	3.64	1.05	Agree
I identify that the rear view is in the back of the solid object.	3.81	0.96	Agree
I see the 3D object reflects the angle of the different views.	4.04	0.94	Agree
I visualize position of the object if I use the solid object easily.	3.83	1.04	Agree
I learn because I know how to rotate the object using alternative models at home.	3.55	1.21	Agree
Grand Mean	**3.77**		**High**

The grand mean (M=3.77) supports the finding that spatial visualization as a technical skill in Technical Drafting is at a high level. This indicates that learners could visualize mental representations and manipulate two- and three-dimensional objects.

Significant Difference in the Level of Teaching Strategies and Technical Skills in Online Distance Learning According to Gender

The computed p-values were compared to the level of significance at 0.05 to determine the significant difference in the level of teaching strategies and technical skills in online distance learning according to gender.

Table 9. Significant Difference on the Level of Teaching Strategies in online distance Learning According to Gender

Variable	Male (Mean)	Female (Mean)	t-value	p-value	Analysis
Adaptive Teaching	4.225	4.003	1.90	0.060	Not Significant
Computational Thinking	4.349	4.098	2.11	0.037	Significant
Learning By Doing	4.444	4.102	2.84	0.006	Significant
Visualization And Analogies	4.219	3.944	2.07	0.041	Significant

As gleaned in the above table, the significant difference on level of online teaching strategies as evaluated by male and female respondents appeared significant in terms of computational thinking, learning

by doing and visualization and analogies denoted by the garnered p-values (0.037), (0.006) and (0.041) correspondingly which were all lower than (0.05) level of significance. This meant that both male and female respondents have the same view on the level of computational thinking, learning by doing and visualization and analogy as an applied strategy in teaching. However, a not significant analysis attained pertaining to the level of adaptive teaching according to gender obtaining the p-value (0.060) which was higher than (0.05) level of significance. This implied that male and female respondents have dissimilar assessment on the level of adaptive teaching strategy of the teachers.

Table 10. Significant Difference on the Level of Technical Skills According to Gender

Variable	Male (Mean)	Female (Mean)	t-value	p-value	Analysis
Calculation Skills	4.054	3.928	0.82	0.413	Not Significant
Critical Thinking	4.013	3.764	2.04	0.044	Significant
Performance on Practical Tasks	3.943	3.813	0.85	0.399	Not Significant
Spatial Visualization	3.837	3.775	0.41	0.686	Not Significant

As shown in the table above, there was a significant difference on level of technical skills as assessed by male and female respondents in terms of critical thinking, as indicated by the obtained p-value (0.044), which was lower than the (0.05) level of significance. This implied that both male and female respondents have the same view on the level of critical thinking as an acquired technical skill. On the other hand, a not significant analysis was obtained for level of calculation skills, performance on practical tasks, and spatial visualization according to gender, with p-values of (0.413), (0.399), and (0.686) respectively, all of which were higher than the (0.05) level of significance. This implied that male and female respondents have dissimilar assessment on the level of calculation skills, performance on practical tasks and spatial visualization skills.

Significant Relationship between the Teaching Strategies and the Technical Skills in Online Distance Learning

The computed p-values were compared to the level of significance at 0.05 to determine the significant relationship between the teaching strategies and the technical skills in online distance learning.

Table 11. Significant Relationship between the Teaching Strategies and the Technical Skills in Online Distance Learning

	Variable	r-value	Degree of Correlation	p-value	Analysis
Adaptive Teaching	Calculation	0.634	Strong	0.000	Significant
	Critical Thinking	0.705	Strong	0.000	Significant
	Performance of Practical Tasks	0.639	Strong	0.000	Significant
	Spatial Visualization	0.612	Strong	0.000	Significant
Computational Thinking	Calculation	0.700	Strong	0.000	Significant
	Critical Thinking	0.758	Strong	0.000	Significant
	Performance of Practical Tasks	0.591	Moderate	0.000	Significant
	Spatial Visualization	0.597	Moderate	0.000	Significant
Learning by Doing	Calculation	0.596	Moderate	0.000	Significant
	Critical Thinking	0.716	Strong	0.000	Significant
	Performance of Practical Tasks	0.543	Moderate	0.000	Significant
	Spatial Visualization	0.571	Moderate	0.000	Significant
Visualization and Analogies	Calculation	0.584	Moderate	0.000	Significant
	Critical Thinking	0.725	Strong	0.000	Significant
	Performance of Practical Tasks	0.582	Moderate	0.000	Significant
	Spatial Visualization	0.621	Strong	0.000	Significant

As shown in the table above, it indicates that adaptive teaching has strong correlation with calculation, critical thinking, performance of practical tasks and spatial visualization skills with r-values equal to (0.634), (0.705), (0.639), and (0.612), respectively. Moreover, the r-values indicate positive correlation which implies that as the level of adaptive teaching strategy increases, the level of technical skills in online distance learning also increases.

The findings reveal that online teaching strategies such as adaptive teaching, computational thinking, learning by doing, visualization and analogies significantly affect the acquisition of technical skills among grade 7 learners. Thus, in online distance learning, there is a considerable link between teaching strategies and technical skills. It has proven that the adaptive teaching strategy where the mode of instruction encourages learners to work independently and are taught to be responsible through experience has substantially aided in the development of skills needed not only in technical drafting subject but also in life lessons. The study suggests that rather than simply listening to theoretical notions, learners learn more successfully when they apply critical thinking and analogies to practical tasks. On this note, basic technical skills, especially in the exploratory years of junior high school, which is the grade 7 level, can be instilled with the use of an effective online teaching strategy and, of course, inclusive of the efforts of both the teacher and the learner. There is no one-size-fits-all strategy. It may vary depending on the needs of the learners to be addressed and whichever the learning modality is.

Findings and Conclusion

The difference in level of online teaching strategies in terms of computational thinking, learning by doing, visualization and analogies as evaluated by male and female respondents appeared significant.

However, the adaptive teaching as teaching strategy appeared not significant. Therefore, the null hypothesis was partially rejected. There was a significant difference on level of technical skills as assessed by male and female respondents in terms of critical thinking. This implied that both male and female respondents have the same view on the level of critical thinking as an acquired technical skill. On the other hand, a not significant analysis was obtained for level of calculation skills, performance on practical tasks, and spatial visualization according to gender. Therefore, the null hypothesis was partially accepted. The null hypothesis that there is no significant relationship between teaching strategies and the acquisition of technical skills in online distance learning among CDBS grade 7 learners was rejected completely.

The findings reveal that online teaching strategies such as adaptive teaching, computational thinking, learning by doing, visualization and analogies significantly affect the acquisition of technical skills among grade 7 learners. Thus, in online distance learning, there is a considerable link between teaching strategies and technical skills. It has proven that the adaptive teaching strategy where the mode of instruction encourages learners to work independently and are taught to be responsible through experience has substantially aided in the development of skills needed not only in technical drafting subject but also in life lessons. The study suggests that rather than simply listening to theoretical notions, learners learn more successfully when they apply critical thinking and analogies to practical tasks. On this note, basic technical skills, especially in the exploratory years of junior high school, which is the grade 7 level, can be instilled with the use of an effective online teaching strategy and, of course, inclusive of the efforts of both the teacher and the learner. There is no one-size-fits-all strategy. It may vary depending on the needs of the learners to be addressed and whichever the learning modality is.

Recommendations

Based on the findings, the researcher made the following recommendations:

1. For learners to be able to use their preferred learning styles in the execution of practical activities. Encourage them to devote more time to practicing practical skills.
2. For technical faculty members who teach technical subjects to continue to apply adaptive teaching strategies in the coming school years and to improve afterwards.
3. Teachers and educational developers can use this tool to assess the present teaching strategies used by teachers in an online setting. May create and deliver differentiated solutions to meet the requirements of the learners.
4. For the school principal and officials to demand that technical faculty members engage learners in more laboratory and hands-on activities. Simultaneously, consider feasible teaching strategies to apply when the pandemic is over and the shift to traditional face-to-face classrooms occurs.

1.3. Construction of references

References should be added at the end of the paper, and its corresponding citation will be added in the order of their appearance in the text. Authors should ensure that every reference in the text appears in the list of references and vice versa. Indicate references by Clark et al., 1962 or Deal and Grove, 2009 or Fachinger, 2006 in the text. The actual authors can be referred to, but the reference citation(s) must always be given.

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1.4. Section headings

Section headings should be left justified, with the first letter capitalized and numbered consecutively, starting with the Introduction. Sub-section headings should be in capital and lower-case italic letters, numbered 1.1, 1.2, etc, and left justified, with second and subsequent lines indented. You may need to insert a page break to keep a heading with its text.

1.5. General guidelines for the preparation of your text

Avoid hyphenation at the end of a line. Symbols denoting vectors and matrices should be indicated in bold type. Scalar variable names should normally be expressed using italics. Weights and measures should be expressed in SI units. Please title your files in this order conferenceacrynom_authorslastname.pdf

1.6. Footnotes

Footnotes should be avoided if possible. Necessary footnotes should be denoted in the text by consecutive superscript letters. The footnotes should be typed single spaced, and in smaller type size (8pt), at the foot of the page in which they are mentioned, and separated from the main text by a short line extending at the foot of the column. The 'Els-footnote' style is available in this template for the text of the footnote.

2. Author Artwork

All figures should be numbered with Arabic numerals (1,2,...n). All photographs, schemas, graphs and diagrams are to be referred to as figures. Line drawings should be good quality scans or true electronic output. Low-quality scans are not acceptable. Figures must be embedded into the text and not supplied separately. Lettering and symbols should be clearly defined either in the caption or in a legend provided as part of the figure. Figures should be placed at the top or bottom of a page wherever possible, as close as possible to the first reference to them in the paper.

The figure number and caption should be typed below the illustration in 8pt and left justified. For more guidelines and information to help you submit high quality artwork please visit: http://ijrp.org/page/instruction. Artwork has no text along the side of it in the main body of the text. However, if two images fit next to each other, these may be placed next to each other to save space, see Fig 1. They must be numbered consecutively, all figures, and all tables respectively.
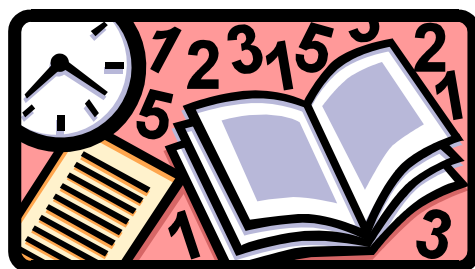
Fig. 1. (a) first picture; (b) second picture

Equations and formulae should be typed and numbered consecutively with Arabic numerals in parentheses on the right hand side of the page (if referred to explicitly in the text),

$$\rho = \frac{\overset{\nu}{E}}{J_c(T = \text{const.}) \cdot \left(P \cdot \left(\frac{\overset{\rho}{E}}{E_c} \right)^m + (1 - P) \right)} \tag{1}$$

They should also be separated from the surrounding text by one space.

Acknowledgements

These and the Reference headings are in bold but have no numbers. Text below continues as normal.

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Appendix A. An example appendix

Authors including an appendix section should do so after References section. Multiple appendices should all have headings in the style used above. They will automatically be ordered A, B, C etc.

A.1. Example of a sub-heading within an appendix

There is also the option to include a subheading within the Appendix if you wish.