

THE EFFECT OF USING DEDUCTIVE AND INDUCTIVE METHODS ON THE VERBAL INTERACTION OF PHYSICAL EDUCATION AND SPORT PROFESSORS

MOURAD ZAIR¹, REDHOUANE BENSASSI²

¹Institute of Sports and Physical Education, Tissemsilt University, Algeria

²Laboratory of Multi-research in Sports Science and Human Movement, Tissemsilt University, Algeria

Correspondence:

Mourad Zair; Institute of Sports and Physical Education, Tissemsilt University, Algeria
mouzair32@gmail.com

Abstract: This study investigates the effect of using the deductive and inductive teaching methods on verbal interaction of physical education and sport professors. The study uses the descriptive approach by tackling two samples of two different professors from the same secondary school (Houari Boumediene, state of El-Bayadh). Then it applies "Hamdan Tool" to observe and analyze the overall verbal interaction over 8 lectures. This research shows that there is less verbal interaction with the professor when he uses the inductive method comparing to the use of the deductive one. To sum up, the study recommends that the use of different methods where the professor's verbal interaction is less than the student's one. Moreover, a further research about this study is extremely needed.

Key words: Deductive and inductive teaching methods, verbal interaction, physical education and sport professor.

INTRODUCTION

A number of fundamental factors influence the educational and pedagogical process's success, including: the abilities of the teacher, and as a result, the willingness of contemporary education to cultivate learners' reflective, investigation, and research/creativity skills. In addition, this emphasizes the importance of utilizing all current teaching strategies to achieve balance between the requirements of students and teachers' professional abilities. Teaching techniques are one of these skills, and they are useful tools for the pedagogical process of learning in general and the treatment of scientific subjects in particular. Because of their effectiveness in providing quality instruction, teaching methods play a significant role in the educational process. A good teacher is one who can bring back a dead curriculum using a good teaching method; because the teacher's means of achieving the educational process's goals, including all of its educational and behavioural components, is the teaching method (Kalza, 1987).

The nature of the subject, the teaching objectives, and the level of study of the students, in addition to the scientific experience of the professor that will assist him in succeeding in a classroom setting, must serve as important foundations and criteria for the professor's selection of teaching methods. As a result, in order for the instructor to impart the desired knowledge to his or her students, he or she has to assume a number of appropriate classroom roles when implementing the chosen teaching strategies. In this regard, Mohsen Attia says in his book *Al-Kafi in teaching methods*: the educational philosophy on which the program is based, the educational objectives to be achieved, the material program and its type (Mohsen Attia Ali, 2006). As was mentioned earlier, the teacher's role has evolved into a mentor's one. Therefore, in order to guide the students toward the objective, professor must adopt a strategy that enables him to effectively communicate and explain the subject. It's also important to remember that methods and subjects cannot be separated. Methods and matters should be connected in a cohesive way. In addition, it is essential to select methods that takes advantage of the students' abilities and encourages them to examine and evaluate the results while also taking into account their cultural level; the logical order in which the issue was communicated. A correct teaching method saves the teacher and the learner's time and effort, in addition to evolving in an organized environment (Salem AbuZeid Attia, 2013). In the classroom, either combined or separated inductive and deductive methods are utilized. And also, they form the foundation of numerous instructional strategies aimed at encouraging student thought and participation. They are necessary for teaching sports and physical education in particular, as well as for education in general. Teaching techniques are unquestionably an essential component of general education. As

a teaching method, sports physical education does not depart from this educational conceptual framework. Additionally, we must conduct an objective measurement of this behavior during the interaction between the teacher and the student in order to attain mastery in teaching sports and physical education. We will be able to evaluate this behavior with the help of this measure, confirming it.

Scientific progress records in education are behind the emergence of many measurement methods, including the observation and analysis of classroom interaction, aiming at scientific evaluation of the teaching process. Classroom observation is one of the most important supervisory activities and tasks. Observation plays a major role in so-called young sciences, as well as in research dealing with new problems. In the field of educational sciences, for example, many studies are still at the stage of orderly observation, but they are essential (Dreij, 2000) (Jordan & Henderson, 1995). And if they are done correctly, they can have a significant and effective impact on the promotion of the teacher as well as the activation of his role of supervisor. There are a variety of interactions that take place in the classroom. One of them is interaction over the phone. It is further broken down into two kinds of interactions: both the teacher’s and the students’ speeches. We are aware of the significance of verbal interaction in the educational process, which is why we are interested in the topic. Something that can be seen in the study of Adel Ahmed Dahan AlAqbi(Aqbi, 2017), it intends to know the reality of the level of teaching of physical education and sports in the Republic of Yemen, through the collection of opinion of mentors, teachers and students of the sector. The results show that the teaching of physical education and sports in Yemen is not successful and effective. The research by Abdel Hafid Kadri study (Kadri, 2019) shows a field knowledge of the pedagogical behaviors that occur in physical education and sports classes. The instructions and directives given to intermediate and secondary school students, where the patterns of verbal interaction differ from one teacher to another; with differences in the ratios compared to the Hamdan standards (Hamdan M. Z., 2010), in some categories of experienced teachers. Through the field follow-up of the researchers, Hamdan notes that the teaching methods of professors, differ from one professor to another, and are not of the same effectiveness. Regardless their working experience.

After looking at the benefits of teaching methods for the educational process as a whole, the significance of physical and sports education, and the role that scientific observation plays in evaluating the teaching process; The following issue manifests itself: How does the physical education and sports professor’s verbal interaction change as a result of teaching methods (deductive and inductive)?

MATERIALS AND METHOD

Participants

The researcher uses the semi-experimental approach to study the effect of using deductive and inductive methods on the verbal interaction of a professor of physical education and sports.

The study population consists of teachers of ElBayad Algeria, secondary schools (working place).

Table 1. Teachers as exploratory experience number in secondary schools

Secondary schools	Mohamed Belkheir	Cheikh Bouamrane	ElhassenIbn Elhaythem	Mahboubi Hadj Aneur
Number of teachers	02	01	02	01

- Two teachers from Houari Boumediene secondary school for the main experience (two teachers because there are only two teachers, from the secondary school because I work there and I can take videos for analysis)

Materials

- Filming is done for the exploratory experience in the El Bayadh secondary schools from 02/09/2020 to 02/20/2020.
- The basic experiment is conducted from 03/01/2020 to 09/13/2020.

Data collection tools

- Arab and foreign sources and references
- Cameras to film classes
- Hamdan’s tool for comprehensive verbal interaction

Study design

The filming is done for 8 teaching classes for two teachers. One using the deductive method and the other the inductive method. Then, half an hour is taken from each class (90minuts) and divided into units of five (05) seconds, where the verbal interaction of the professor is monitored. The analysis of the recorded videos, and the number of repetitions of terms related to the terms of the professor’s direct and indirect talk are recorded: (acceptance of pupils’ feelings, praise, encouragement and reward of pupils, teacher lecture or information, to the cell of the type and nature of pupils).

Hamdan’s standardise tool for comprehensive verbal interaction

The comprehensive verbal interaction tool contains sixteen behavioural groups. One additional (category 10) to show the type of pupils interacting with from the teacher. The tool describes two types of conversation or classroom interaction: teacher talk, talk and pupil reactions. While the teacher’s talk is divided into two main types: indirect and direct talk. Pupils’ reactions or classroom talk also consist of two types: talk, constructive and modern reactions, or non-constructive negative reactions.

The exploratory study

The researcher selects an exploratory sample of physical and sports education professors for El Bayadh secondary schools, consisting of 05 professors without the original study sample and fully similar to the original sample to ascertain the validity of the measurement tool.

Table 2. Results of the Pearson correlation coefficient to calculate the validity and reliability of the measuring instrument

Behaviors(teacher’s and pupils talk)	Sample volume	Computed correlation	Honesty Lab coefficient
The teacher indirect talk	06	0.90	0.94
The teacher direct talk		0.92	0.95
Constructive student talk		0.94	0.96
Unconstructive student talk		0.91	0.95
The tabular value of (R) is at the significance level 0.05 and below the sine degree 05 = 0.87			

Through table 2, the stability factor for the measurement tool categories (Hamdan’s tool) for comprehensive verbal interaction analysis is the lowest correlation coefficient (0.90) and the highest value (0.94), which shows that the tool is highly stable, and the researchers uses the self-honesty factor with the lowest value (0.94) and the highest value (0.96), which shows that the tool is characterized by a high degree of honesty.

Statistical analysis

Statistical analysis was performed using the SPSS software (version 25) and significance levels were set at $p \leq 0.05$.

RESULTS

Table 3. The value of the arithmetic average and standard deviation and (T) student applied between the two professors using the deductive and the inductive methods, that is from unloading Hamdan's verbal interaction tool results.

Teacher's talk	Teaching method	Arithmetic average	Standard deviation	Percentages	Teaching classes	The computed value (T)	Statistical significance	
The teacher indirect talk	Accepting student's feelings	Inductive	6.62	2.58	1.39	08	3.06	Function
		Deductive	2.75	1.56	0.61			
	praise encouragement and rewards	Inductive	131.8	25.03	20.49		7.36	Function
		Deductive	56.50	10.30	9.47			
	the use of pupil's ideas	Inductive	8.75	9.29	1.95		0.50	Not function
		Deductive	11	7.08	2.44			
	Teacher's questions to students	Inductive	14.37	5.95	1.92		0.61	Not function
		Deductive	12.62	4.55	1.46			
	teacher's answer to pupils	Inductive	4.75	3.03	1.05		5.62	Function
		Deductive	12.12	1.69	2.69			
	The sum of the teacher's indirect talk	Inductive	166	27.82	25.80		5.91	Function
		Deductive	95	15.28	15.93			
The teacher direct talk	Teacher's lecture or recitation	Inductive	46.37	13.71	7.20	08	3.23	Function
		Deductive	68.37	11.66	11.46			
	directions and orders	Inductive	160.2	13.71	20.18		4.57	Function
		Deductive	188.2	8.62	26.16			
	Criticism and justification of authority	Inductive	54.37	10.40	12.13		3.19	Function
		Deductive	72	10.22	16.01			
	The teacher's hostile behavior	Inductive	5.12	3.88	1.14		0.61	Not function
		Deductive	6.62	5.14	1.47			
	The type or nature of pupils	Inductive	3.5	3.04	0.78		0.65	Not function
		Deductive	4.75	3.99	1.05			
	The sum of the teacher's direct talk	Inductive	269.6	41.87	41.90		3.51	Function
		Deductive	340	32.45	57.02			

The tabular value of (T) is at the significance level 0.05 and degree of freedom 07 = 1.89 in the total of the professor's speech with the ratio: Inductive = 67.70% - Deductive = 72.95%

DISCUSSION

Through table 3, The teacher's indirect speech: the calculated value of (T) is greater than the tabular value of (T) 1.89 in the categories of acceptance of feelings of the students, praise and encouragement from the students, and the teacher's response, successively: (5.62 ,7.36 and 3.06). It is in favor of the greatest arithmetic average. That is in favor of the teacher using the inductive method in the overall conversation. The researcher attributes these ratios in the areas of indirect verbal interaction to the ease and simplicity of the inductive method for adolescent students over the deductive method. This is why most educators insist on the need to choose the right teaching method to be used in the classroom, by the teacher, so as to take into account the age levels of his students, their abilities, and their requirements (Mohammed.F., 2005). Something that makes the exercises for the students to do easy, accepts the students' feelings, and praises and encourages the students for doing well on the exercises the teacher gave them; students' lack of curiosity, self-reliance, and investment in these benefits; Consequently, the teacher is not required to respond directly to students' inquiries. This holds true for the entirety of the professor's indirect speech. In addition, it is evident that the professor's inductive-method conversation contains more indirect speech than the professor's deductive-method conversation. That is to say more democratic, which is in agreement with the study. By Allali Taleb

on the second generation program: helps in still a spirit of autonomy. Learn to achieve forms, induction, deduction, conciseness, generalization, discussion, group work (Taleb, 2018) and therefore, self-control. In this regard, Hull et al (Hull & Virnelli, S., 1987) say it is the tendency to feel and act as if the individual is a factor influencing life events and not a helpless and weak person. With more detail, it can be said that the rate of the total speech of the professor applying the inductive method during the semester, is about 67.70%, which is closer to the average speech of the professor, in ordinary cases 65% (Hamdan M. Z., 2010). As for the teacher's total speech applying the deductive method in the same period, it is about 72.95%, which is higher than the teacher's average speech (Hamdan M. Z., 2010). So, the inductive method is better than the deductive method in teaching physical and sports education. Besides, the professor intervenes less in the inductive method, than in the deductive method, and thus, leaves more space to the students.

A quick look at the total of the teacher's direct speech (41.90 %) and indirect speech (25.80 %) reveals a style and influence that are direct to the students. It is evident from the teacher's total direct speech (57.02 %) and indirect speech (15.93 %) that he has a method and a direct influence on the students. This is due to the nature of the physical education and sports course, which requires giving orders directly to the students so that they carry them out. However, as was previously mentioned, the inductive method and the student's age give the student more room to work. The teacher who used the inductive method in the enrolled section congratulated and encouraged the students 132 times across all classes, for 20.49 %. This is higher than the global verbal interaction tool's overall percentage of teachers and students' behavior, which is 2% of the lesson's total 30 minutes time (Hamdan M. Z., 2010). The professor who used the deductive method had a rate of 9.47 %, and this was due to the nature of the class and the need for encouragement from the professor for girls in particular in the physical education and sports class; to complete the tasks that have been assigned to them, knowing that certain teaching methods can inspire students to learn this subject (Sayma, 1995).

The percentage of questions answered by the teacher using the inductive approach is 2.97 %. This is lower than the teacher's use of cell number 4,5 (his questions to the students and his responses to them) in typical verbal interactions using the global tool Hamdan uses. Up to 15% of the time allotted to the observed class can be represented by this. On the other hand, the percentage that applies to the teacher who used the deductive method is 4.15 %. The researcher attributes these outcomes to the fact that the session does not ask many questions and requires more motor activity than mental activity to perform exercises. As an educational system, physical education and sports are primarily based on a child's fundamental sports potential and the models that are commonly used to execute these movements and skills in the general education stage. Ensures the achievement of the stage-specific behavioural, motor, cognitive, and emotional goals through the management of the educational process (Abu Abdo, 2002). In terms of the difference between the two methods, exercises favour the inductive method and are simplified, so; Due to the exercises' simplicity, the teacher gets fewer questions about how to carry them out and fewer questions from students.

The calculated value of (T) 3.23 of the teacher's direct speech from table n° (03) is higher than the value of (T) tabular in cell 06 (lecture and presentation of information), where the rate of use by the teacher of cell 06 (lecture and presentation of information) is about 35 to 40 % of the total time allotted to the class under normal conditions. In general, the teacher's adoption of this behaviour can range from as little as 20% to as much as 50%. It has been noticed that 11.46 % of the teacher's speech during the session uses the deductive method, while 7.20 % of the teacher's speech uses the inductive method. Since physical education and sports classes require motor rather than mental activity, it was discovered that the teacher who uses the deductive method is closer to lecture and presentation of information than the teacher who uses the inductive method. Because it is closer to the inductive method has a higher statistical significance than the deductive method.

The rate of the calculated (T) in cells represents the following: (directives and orders), (criticism and justification of authority), and (teacher hostile behavior): 4.57, 3.19, and 0.61), which is greater than the number (T) in table 1.89, with the exception of the teacher's hostile behavior, which is not significant. 33.45% of the time, the professor who uses the inductive method gives orders, instructions, and criticism. Additionally, he rejects and belittles students. 43.64% for the professor who used the deductive method, which is a lot higher than the Hamdan tool's average rate at its highest limit, which is 2% of the total time spent in the observed session. This is because the physical education and sports class begins with instructions and tips for a successful warm-up, as well as criticism, which students of the class enjoy more than necessary and unnecessary conversation to make their classmates laugh. In accordance with "Nour's" statement in his book "The adolescent's desire to rebel against parental, social and religious authority, because he wants to build his own specific values and principles. Does not accept the dictates of others, and tends

to criticize his parents and his teachers, in search of error ... etc” (Nour, 2004). However, a teacher who employs the deductive method frequently intervenes due to the students’ inability to comprehend many of the exercises that are not simplified and the teacher’s tendency to issue more directives and criticism. This is in contrast to the idea that the student is the focus of education (Marwan, 2016).

Under normal usage of the Hamdan tool, approximately 50% of the total time allotted to the session is spent by the teacher using cells 4,5,6 (questions, answers, and lectures). This use can, on average, reach between 28% and 65%, which is higher than the calculated rate of 10.17 % for the teacher using the inductive method. Additionally, the nature of the session, which requires more physical than intellectual activity, resulted in the teacher employing the deductive method at a rate of 15.61 %.

In the previous cells, the inductive method had a conversation rate of 30.32 % and the deductive method had a conversation rate of 24.49 %. This indicates that the inductive method provides students with more space to talk and participate in lessons. Ben kasmi Yaguoub, Abdel Hafid Kadri, and others all came to the same conclusion from their research: When compared to the results obtained by Flanders, the ratios of the various teachers’ models of verbal interaction differ. The following behaviors frequently identify an experienced teacher: Acceptance of students’ ideas, praise and encouragement, instruction and instruction, and explanation and indoctrination

CONCLUSION

When explaining sports skills to teenagers, the inductive method is easier and simpler than the deductive method. First of all, in contrast to the deductive method, the ratio of the sum of the professor’s speeches using the inductive method is closer to the rate of the professor’s speech in typical situations as measured by the Hamdan tool. When teaching physical education and sports lessons, the inductive method is superior to the deductive method because it is consistent with teaching with skills. Because the teacher is less talkative in the inductive method than in the deductive method, there are more opportunities for students to participate in the teaching process. Hence, inductive and deductive methods are effective in categories of hostile behaviour of teachers, as well as in type and nature of students, as there are no statistically significant differences in the percentages of the analysis of Hamdan tool for a full analysis of verbal interactions for these groups, which is closer than normal cases to the Hamdan tool.

REFERENCES

- Abu Abdo, H. A. (2002). *Fundamentals of Teaching Motor and Physical Education*. Alexandria: Radiation Library.
- Aqbi, A. A. (2017). Evaluation of the teaching of physical and sports education teachers in secondary education of the Republic of Yemen as seen by mentors- teachers- pupils. *Scientific Journal of Physical and Sports Activity Sciences and Techniques*, 378-415.
- Dreij, M. (2000). *Introduction to the teaching process* (analysis of the teaching process). Rabat: National Centre for The Formation of Education Inspectors.
- Hamdan, M. Z. (1999). *Preparing learning and teaching modern education series*. Oman, Jordan: Modern Education House.
- Hamdan, M. Z. (2010). *Teaching observation tools Concepts and methods of measurement in classroom education*. Damascus: Dar Al Kitab.
- Hull, J. V., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. *Journal of personality et social psychology*, 53(3), 518-530.
- Jordan, B., & Henderson, A. (1995). Interaction analysis: Foundations and practice. *The journal of the learning sciences*, 4(1), 39-103.
- Kadri, A. A. (2019). Teaching Behaviors of Teachers of Physical and Physical Education for the Intermediate and Secondary Stages According to Hamdan’s Tool for Observing and Analyzing Comprehensive Classroom Interaction. *Sports creativity*, 73-96.
- Kalza, R. A. (1987). *Social material between endoscopy and application*. Makkah: University Student Library.
- Marwan, J. (2016). Degree of knowledge of the professor of physical and physical education of the constructivist model in learning. *Journal of Science and Technology for Physical and Sports Activities*, 60.
- Mohammed.F. (2005). A comparative study of the achievement of cognitive goals and trends towards the subject of teaching methods in physical education. *Al-Rafidain journal*, 12.
- Mohsen Attia Ali. (2006). *Sufficient in Arabic language teaching methods (Vol. 1)*. Oman, Jordan: Dar Al Shorouk.
- Nour, E. (2004). *The psychology of adolescence*. Alexandria: University Youth Foundation.
- Salem AbuZeid Attia. (2013). *Brief teaching methods*. Oman: Jarir Publishing and Distribution House.
- Sayma, A. A. (1995). *Anxiety and Academic Achievement*. Arab Center for Student Services.
- Taleb, A. (2018). The reality of applying the curricula of the second generation of the approach with competencies in the teaching of physical and sports education in middle education. *Journal of Science and Technology for Physical and Sports Activities*, 22-38.

Priljen: 18. oktobar 2022. / Received: Oktober 18, 2022
 Prihvaćen: 28. novembar 2022. / Accepted: November 28, 2022

