Learning is an active process in which the learner extracts pertinent information and constructs meaning out of it in order to make decisions. In the constructivist approach of learning, knowledge is extracted from authentic experience: Cunningham (2003) expresses the semiotic aspects of learning. Vygotsky (1987) assumes that language and learning are inextricably intertwined, and that the subject can make explicit the experience by words. This study's aim is on the bridging between reflective practice, language and physical activities.

The PE programs, inspired by constructivist approaches, try to develop the student reflective practice while confronted with a problem-solving setting. At the end of Secondary School, the Baccalauréat examination (students 18 years old), is based on the evaluation for decision-making. After choosing among three optional sports, students have to (1) declare provisional strategies, (2) compare effective/declared practices and (3) argue causes for modifications. Especially in orienteering, the authentic outdoor environment provided by the running field allows creative strategies to emerge. Teachers choose varied natural spaces composed of hills, glades, woods, tracks and other reliefs. The security of practice is guaranteed because (1) the area is restricted, (2) the teacher went to see how the land lies end (3) the teacher's location allows the group supervision. The evolution field is appropriate to develop strategies for searching and reaching markers under time constraint.

The “baccalaureat” evaluation grid is referenced by national criteria that specify and prioritise student theoretical choices through pragmatic indicators. Three main criteria are taken as reference: (1) itinerary’s control and map’s lecture, (2) difficulty management and (3) distance covered under time constraint (T = 55’ race in all). Taking risks while constructing the itinerary and realising the contract are valorised. These criteria emphasise the relationship between reflective practice and personal resource management during action so as to be efficient: they present a high level of complexity. This study aim is to describe and to model how students proceed for decision-making when confronted with such a problem-solving setting.

Method

The used method consisted in observing student behaviour and in collecting verbal and written data during the assessment lesson, at the end of an orienteering learning cycle (8 lessons; 1h30 effective practice time each). Students were given a topographic map presenting the markers to be chosen. The reading consisted of estimating the levels of difficulty (i.e. the natural relief, obstacles on the road, distance towards the markers, useful indices to find them, scores of each markers …) in relation with personal resources at disposal. After reading the map, students (n = 25; 18 years old) had to declare by written which markers according to the provisional itinerary. After running, the expected score was compared with the issue of running and the effective performance. Students had to comment the effective/projected run differences.

The data collected laid on (a) the individual written reports linking maps and running circuits before/after action, and corresponding arguments, (b) the video recoding of assessment sequence that enables to make a systematic observation, and (c) the individual final scores. Written reports were compared to observed running races and final scores.

Data treatment

Several variables were taken into account: (1) the number of found markers, (2) the relationship between reflective analysis and successful actions, (3) the contract type, and (4) the marker level of difficulty revealing energetic devotion and self-confidence.

Results

Competency for describing/arguing/realising a project

The relevance of the learner’s text describing the pre-planned circuit and arguing the choices was differential. 18% (4 students) had a poor analysis but were efficient on the field; 18% were rational and well argued, in reference with an appropriate practice; 27% (6 students) proceeded a coherent analysis but failed while realising their project; 14% (3 students) failed without being able to analyse the task constraints; 18 % were incoherent at a time while pre-planning and acting; and 5% (1 student) had neither appropriate analysis nor efficient practice. Three students are excused.

This observation let us know that the previous reflective practice is a condition necessary but not sufficient for succeeding: 45% of the class was able to read a map in relation with action strategies. The reading seems to be a perquisite for decision-making in orienteering.
Action strategies and resource management

Marker choices let us know about student’s profiles. In fact, choice criteria were made according to the number, distance, score weight and difficulty for reaching. Four student profiles were extracted. Some of them choose many markers but (1) they don’t find them all because of the time constraint or (2) they were lost and/or lose their motivation when confronted with the difficulty of the task. Some students choose few markers and (3) found them all (even if they were easy of difficult to reach). Others (4) didn’t find them all because of the difficulty to reach them or because of “bad day” (no luck).

This observation shows that the kind of plan depends upon the self-confidence and self-management of personal resources. A well-adjusted plan is linked with a student’s ability to estimate the own capabilities. This task seems to be selective with students that are not able to project towards efficient action strategies in relation with personal potentialities. Finally, four types of performances were observed: the pre-planned circuit was completed with all markers found; the circuit was completed with some markers found; the circuit was completed, but markers were only found by random; and the runner was lost and found no markers.

Toward the modelling of student reading and reflective practice

The crossing of observations let us modelling the student’s profiles. We define a “profile” as a common set of characteristic functioning register linking reflection on/in action and efficiency.

Energetic potential: differential ways to manage physical resources

Three student profiles (the "Thrifty", the "Efficient" and the "Gambler") were extracted through the discourse analysis respectively according to their energetic potential.

The "Thrifty" students tried to expend lower level of energy. Different learners corresponded to this profile: the ones who do not have enough capacity, have little courage, no self-confidence, and a bad interpretation of the criteria assessment and reality of the field.

The "Efficient" students had a good interpretation of the setting. They knew how to find a lot of markers without expending too much energy while running in a varied field. They linked the three decision-making parameters and obtained the best results.

The "Gambler" took inappropriate risks without care or precautions.

Action conception: between planning and adapting

Three student profiles were extracted through discourse analysis according to reflective practice.

The "Gleaner" pre-planned the circuit but picked up other markers seen by random. The "Improvisator" didn’t anticipate, was sometimes lost and not very efficient. The "Contractual" planned a circuit and nothing could change their mind, even in a case of failure or time over.

These profiles for reading the map and choosing a runway were pertinent indicators of scoring levels.

Discussion

The relationships between reflection (i.e. reading a map while extracting pertinent-for-action indices, speculating on action issues in relation with the assessment criteria), action (i.e. racing while mastering physical capabilities in varied field) and language (i.e. expressing the project, arguing choices, describing facts and personal experience) appear to be strong, and predictive of student performances.

Perspectives: pedagogical issues

When confronted with such a problem-solving setting, the learner who succeeds presents self-confidence, reflective practice, and well-managed physical potentialities in relation with field characteristics. The teacher’s intervention consists in providing student verbalization while explaining reasons for choices and action’s projected effects. Students have to “put words on actions” in order to better analyse reasons for choice and available action strategies.

Several remarks may be useful. Firstly, the self-confidence parameter is important, as the student that involves into pre-planned strategies has to validate it or not within action. Doubt while reaching the markers may reduce the efficiency. Secondly, the teacher will carefully be aware of de-motivation while proposing optimal difficulty levels (i.e. space, time and material variables). Thirdly, the teacher’s task is to induce efficiency without seeing in action the student practice and the verbal exchanges and written reports let them profile a student’s way of learning. Finally, in the case of poor performance, the difficulty is to identify the choice parameters and to extract the inappropriate reasoning: the teacher has to talk with the student in order to help manage the task constraints.
Conclusion

Successful students are able to put in set several factors: task system’s constraints understanding, analysis of pertinent-for-action indices, management of an optimal difficulty level in relation with personal resources and self-confidence. In addition to the competency for orienteering, students are requested to be able to develop reflective practice and action strategies. These competencies, when generalised to everyday life, are supposed to make them become autonomous actors of their further professional project in that way that they learn how to make decisions and to elaborate strategies. Such a PE objective appears to become crucial in an evolving and competitive society.

References


