

Transdisciplinary Approach and Intensity in Second Language Learning/Teaching

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This article explores the concept and role of intensity in the research project on Intensive Core French in the province of Newfoundland and Labrador. Intensity in this project is characterized by a reorganization of the timetable and a reorientation of the curriculum. The theoretical foundation of the project – a transdisciplinary approach to second language learning/teaching – is based on Cummins's hypothesis on the interdependence of languages, a sociopsychological theory of development, and Vygotsky's conception of the relationship between instruction and development. A model is developed in order to illustrate the relationship between second language learning and the development of cognitive, social and personal capacities and organizational skills. It is argued that the types of teaching strategies used in second language classrooms have important effects on the development of these capacities. The transdisciplinary approach developed in our research project, which tests on the concept of intensity and implies the compacting of the curriculum both in English and other subjects, enhances the effects of second language instruction.

Cet article examine le concept d'intensité et son rôle dans le projet de recherche sur le français intensif dans la province de Terre-Neuve et du Labrador. Dans ce projet, le concept d'intensité implique une réorganisation de la grille-horaire ainsi qu'une réorientation du curriculum. Les fondements théoriques du projet – une approche transdisciplinaire dans l'apprentissage/enseignement de la langue seconde – prennent en compte à la fois l'hypothèse de Cummins sur l'interdépendance entre les langues, la psychologie sociale du développement, et la conception de Vygotsky sur les relations entre l'enseignement et le développement. Les auteurs développent un modèle illustrant les relations entre l'apprentissage d'une langue seconde et le développement des capacités cognitives, sociales et personnelles de l'apprenant ainsi que ses habiletés méthodologiques. Ils affirment que la nature des démarches d'enseignement utilisées dans la classe de langue seconde a d'importantes conséquences sur le développement de ses capacités. L'approche transdisciplinaire développée dans le projet de recherche, reposant sur le concept d'intensité et impliquant la compression du curriculum en anglais langue maternelle et dans d'autres matières scolaires, accroît les effets de l'enseignement de la langue seconde.

In order to explore the concept of intensity and its role in second language learning, we will define intensity and examine the extent to which it is effective in increasing second language proficiency. However, intensity has several definitions and, in consequence, different models of intensive second language instruction may be identified. Intensity may mean only a concentration of instructional time, as in the block scheduling of language classes. It may also imply an increase in instructional time, as in certain experiments in immersion classrooms or many Intensive English classrooms in Quebec. It could also imply, as in Intensive French in Newfoundland and Labrador, a reorientation of the curriculum in addition to both concentration and increase of time. We will use as the basis of our discussion the case of Intensive Core French in Newfoundland and Labrador¹.

A. Intensive Core French in Newfoundland and Labrador

Intensive Core French is an enrichment of the core French program by the creation of a period of intensive exposure to French enabling students to receive three to four times the number of

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hours of instruction normally devoted to French in the school year in which the program is offered. Until now, in the Newfoundland and Labrador context, this enrichment occurs at grade six.

1. Characteristics

Intensive Core French possesses three major characteristics based on empirical research that seeks to determine the most effective ways of learning a second language: an intensive period of study (Lightbown and Spada, 1989), use of the target language as a means of communication (Stern et al., 1976; Swain, 1981) and a focus on language learning rather than on the learning of subject matter in the second language (Netten, 1991; Lyster and Ranta, 1997; Lyster, 1998). Intensive Core French attempts to address these issues by organizing instruction in such a manner as to provide the student with an intensive period of exposure to French in which the target language is the means of communication in the classroom and the focus of the activities in the classroom is on the learning of the second language.

2. Organization

The implementation of Intensive Core French in Newfoundland and Labrador required two major adjustments: a reorganization of the instructional time and a reorientation of the curriculum.

2.1 Reorganization of the instructional time

The intensive exposure to French is achieved by compacting the regular English curriculum and creating a concentrated block of time in one semester of the school year devoted exclusively to the learning of French. In general, two types of arrangements have been developed in order to respond to the constraints of different school situations; either 80% (the greater part of the school day) or 50% (approximately half of the school day) is devoted to Intensive French. The total amount of time devoted to French is increased from the normal 90 hours for grade 6 to from 200 to 400 hours. Thus, intensity in the Newfoundland school situation has three organizational components: an increase in instructional time, a concentration of instructional time, and uninterrupted time, that is a block of time for French activities uninterrupted by time devoted to other subject areas.

2.2 Reorientation of the curriculum

In order to create the learning environment required for the implementation of Intensive Core French a reorientation of the curriculum was required. This reorientation also possesses three components: a compacting of the regular curriculum, an enrichment of the French curriculum, and the use of an interactive pedagogy and project-type activities (*la pédagogie du projet*).

2.2.1 Compacting the regular curriculum

In order to achieve the amount of time required for Intensive French, the regular curriculum had to be compressed. To this end the amount of time spent on certain subject areas was reduced, or the subject eliminated altogether. In most schools the English language arts curriculum was considerably reduced. The choice of other subjects and the amount of instructional time depended upon the priorities of the school involved; in general, subject areas compressed included science, social studies, health and religion. Mathematics was not compacted in any of the participating schools. In the other semester, the regular curriculum was followed, with the usual time allotments; core French formed a part of that curriculum, as is normally the case. Examples of the compacting of the curriculum may be seen in Appendix A.

Intensive French was conceived as a program which would enable a wide spectrum of students to profit from the advantages of an immersion-type experience, particularly students in rural areas where French immersion programs cannot be implemented. Therefore, it was not deemed

appropriate that the regular curriculum should be taught without any adjustments other than that of speed of delivery. Nor was it considered desirable to increase the amount of homework which would be given to students in order to assist them to complete the regular curriculum more quickly. Consequently, in compacting the curriculum, it was decided that, while the subject matter goals for all subject areas for grade 6 should be maintained, the number of resources used to achieve these goals would be reduced. Thus, students follow the regular curriculum at a rate that would be normal for grade 6 pupils.

2.2.2 Enriching the French curriculum

In order to make optimum use of the increased time for French, an enriched curriculum was required. This enrichment was provided through expanding the content of the curriculum, increasing the depth of exploration of topics, and adopting a whole language approach to the teaching of the second language.

It was not possible to use the regular core French texts, as they are conceived for teaching periods of approximately 40 minutes per day; teachers needed a sequence of activities that would last for three to five hours in a day and keep students actively using French in authentic communicative situations. Nor could lessons be developed from resources used at the higher grade levels because they were not suited to the level of cognitive, social and personal development of grade 6 pupils. Therefore, a new curriculum was developed by the participating teachers with experience teaching both the regular curriculum and core French at grade 6. This curriculum was based on a theme approach that enabled teachers to explore and develop areas of interest to particular pupils, or groups of pupils, thus implicating them in their learning to a greater degree than is often the case in a regular core French classroom and increasing their motivation to use French. The curriculum is cognitively demanding, and increases in complexity of language use, tasks and knowledge base during the five months. It integrates some information from other subject areas, such as science (environmental issues), social studies (Canadian and world geography; Canadian and world history) and health (rules for good nutrition). However, it is to be remembered that the goals of all teaching activities are linguistic ones related to communication; no subject matter goals are specified.

In addition, the curriculum was conceptualised as a language arts experience for the pupils. A whole, or integrated, approach to language learning was adopted, and all activities were based on authentic language use. All four skills are integrated in the program from the beginning, but reduced to three according to Brumfit's categorization: interaction (listening and speaking), reading and writing (1984). The use of a whole language approach to learning French provides considerable language enrichment beyond that of a regular core French classroom.

2.2.3 Use of interactive pedagogy and project-type activities (la pédagogie du projet)

The third aspect of the reorientation of the curriculum targets the teaching strategies. Regular use of an interactive pedagogy, such as cooperative learning (work in pairs and small groups) and *la pédagogie du projet*, is an essential part of Intensive Core French as conceived for Newfoundland and Labrador. Through projects, students are able to work cooperatively, assisting each other in their learning as well as undertaking tasks that are of particular interest to them or congruent with their particular skills and abilities in the second language. Projects also permit students to use language in many different contexts, enabling them to use more types of language functions (explaining, gathering information, asking questions, negotiating meaning) as well as integrating knowledge from different sources using complex language structures (scaffolding). The use of this types of pedagogy is crucial not only because of the frequency and complexity of language use but also because of the

increased possibilities for the development of cognitive, social and personal capacities, and the organizational skills of the learner.

B. A Socio-psychological Transdisciplinary Approach

The theoretical basis of our research may be called a transdisciplinary approach to second language instruction. This approach integrates three main components: Cummins' interdependence of language hypothesis (1979, 1981), neo-piagetian's explanation of the relationship between social and cognitive development (Doise and Mugny, 1981; Moscovici, 1970; Mugny, 1985; Perret-Clermont, 1980; Schubauer-Leoni, 1989) and Vygotsky's conception of the relationship between instruction and development (Vygotsky, 1962) which corresponds, more or less, to the current philosophy of *les compétences transversales* (Ministère de l'Éducation du Québec, 1997; Roegiers, 2000). We have taken these bases, adapted and expanded them somewhat in order to provide a theoretical framework for Intensive Core French.

Broadly speaking, in the educational literature, most of the authors would recognize four types of transdisciplinary capacities which are developed in the learning of different school subjects: cognitive, social, personal and organizational skills (Ministère de l'Éducation du Québec, 1997). In order to assist in understanding these skills, the following examples are given. By cognitive capacities we mean the development of skills related to reasoning and logical thinking, such as analysis, synthesis, inferencing, sequencing, understanding complex relationships, drawing conclusions, using abstract concepts, problem-solving, hypothesis testing, and so on. By social capacities, we understand skills such as acceptance of others, working cooperatively with others, toleration of other points of view, etc. By personal capacities, we make reference to qualities such as confidence (or self-esteem), initiative, responsibility, autonomy, etc. By organizational skills, we refer to planning and organizing work, respecting deadlines, using reference works, and so on.

1. Interdependence of languages

Cummins (1979, 1981) proposed that there is a relationship between L1, L2 and cognitive development. In his view, the learning of any language develops certain aspects of cognition which are transferable to other languages; that is, there is a common underlying language proficiency (the iceberg theory) that affects learning of more than one language. Competencies or skills learned in one language can be used in another, contributing to the development of general language literacy skills (McLaughlin, 1994). Cummins' theory, we believe, explains, for instance, that once a student has learned to read in L2, as is the case in early French immersion classrooms, it is not necessary to re-learn the whole reading process in L1 (though a new set of sound-symbol correlations must be mastered); or, once the student has learned the writing process in L2, it is not necessary to re-learn the process in L1 (though it is still necessary to learn syntax, spelling and punctuation for L1). Swain (1986) carried the hypothesis further in suggesting that, as students learn to use the second language, they also enhance their abilities to engage in the cognitive processes associated with language, such as sequencing, inferencing and so forth.

While Cummins explored his interdependence hypothesis primarily in the context of the transfer of skills from L1 to L2 in a minority language learning context, we are emphasizing the application of this hypothesis to the learning of L2 in a majority language context. It is our belief that cognitive development occurring in L2 can also be applied or used in L1. In our view, however, it is not just cognitive capacities developed through one language that are available for use in another language, but it is our contention other capacities (social, personal and organizational skills) are also developed while learning an L2 which may be accessed for use in L1.

Compacting of the English language arts curriculum can be justified in part by these hypotheses, as well as by the enrichment of the French curriculum and the adoption of a whole language approach to teaching the second language. Therefore, some reduction in, or even elimination of, the time devoted to English language arts in grade 6 does not entail a corresponding reduction in the acquisition of literacy skills. Compacting some of the other subject areas can also be justified in a similar fashion. The general capacities that can be developed by the study of certain other subject areas, such as problem-solving or hypothesis testing in science or analyzing and synthesizing information in social studies, are developed by the activities and tasks accomplished in the context of the themes explored and the projects undertaken in Intensive French. As a result, a small reduction in the amount of time spent on these subjects in grade 6 does not create a situation where substantial learning loss is likely to occur. The transdisciplinary capacities developed are available for use in L1. There is a certain amount of general knowledge which is also learned because language use has to be contextualised. For example, in a unit on travel, students could learn the provinces of Canada and their capitals, as well as some similar information for other countries; these topics are normally studied in the social studies curriculum. While it is to be remembered that the attainment of academic content goals is not envisaged in using these topics, their introduction does enable teachers to achieve the academic goals more quickly once the topic is reintroduced in the second semester within the curriculum of the specific area. The knowledge learned in French contributes to general knowledge development in L1.

2. Causal relationship between social and cognitive development

Neo-piagetian theory, which developed in the 1970's and gradually became a genetic social psychology, extended, but also to a certain extent contradicted, the predominantly individualistic psychology of development which characterized Piaget's (1967) conception of the development of the child. Several researchers (Doise and Mugny, 1981; Mugny, 1985; Perret-Clermont, 1980) questioned the relatively late role attributed by Piaget to socialisation in the development of cognition. The crux of the neo-piagetian school of social psychology is that social interactions play a role in the cognitive development of the child much earlier than Piaget hypothesized. Furthermore, socialisation is not just an external factor that plays a role once thought has been developed, but acts as an agent in the intellectual development of the child from a very early age. Thus there is actually a causal relationship between social interactions and cognitive development: "This conception [socio-psychological approach] goes further than Piagetian parallelism because it assumes a causal connection between social development and cognitive development" (Mugny and Carugati, 1989: 5).

In recommending to teachers the frequent use of more complex interactional types of activities we believe that teachers contribute to the development of the cognitive capacities of the students. Thus, the adoption of an interactive pedagogy related to the accomplishment of intellectually interesting and complex tasks through social interaction with peers enables students to enhance both the linguistic aspects (knowledge) of the learning of a second language as well as the cognitive aspects (capacities) of learning to use it. In addition, it is our belief that the use of this interactive pedagogy enhances the development of other cognitive, social and personal capacities and organizational skills which are transdisciplinary and which contribute to the overall development of the individual.

3. Development of Transdisciplinary Capacities

One of the theoretical foundations of our research is the hypothesis that in the learning of every subject area there is both a body of knowledge which must be acquired and certain capacities which are developed. In other words, students must not only acquire knowledge, but must also learn how to use knowledge. At the surface level, knowledge can vary from subject to subject; however, at

a deeper level, capacities developed in learning to use new knowledge can be common to several subjects. Indeed, according to Vygotsky:

Instruction has its own sequences and organization, it follows a curriculum and a timetable, and its rules cannot be expected to coincide with the inner laws of the developmental processes it calls to life. [...] We found that intellectual development [...] is not compartmentalized according to topics of instruction. Its course is much more unitary, and the different school subjects interact in contributing to it (Vygotsky, 1962 : 101-102).

Because these capacities are not entirely subject specific, their acquisition through an L2 increases the cognitive, social and personal capacities, and organizational skills of the learner. For example, in science and mathematics, it is assumed that certain problem solving skills are enhanced; in the learning of social studies, other analysis and synthesis capacities are developed. For every subject area, it is envisaged that some contribution will be made to the overall development of the individual; not only will the student learn the particular knowledge and capacities associated with the specific subject (such as certain aspects of geography in social studies, for example, the skill to interpret maps) but also certain abilities of analysis and synthesis will be developed which can be used when engaged in cognitive activities that are not related to social studies. It is these types of competencies, which are transdisciplinary in nature, that have been referred to as *les compétences transversales* (Ministère de l'Éducation, 1997); according to Roegiers (2000 – our translation from French): “A capacity is the ability, or the capability (aptitude) to be able to do something. It is an activity that one accomplishes. To identify, to compare, to memorize, to analyze, to synthesize, to categorize, to sequence, to make abstractions, to observe, . . . all of these are capacities”. It is in part because of the role of these transdisciplinary capacities that the regular curriculum can be compacted for a five month period without creating problems for students; it is also to enhance the development of these competencies that an enriched curriculum must be offered in the French classroom and an interactive pedagogy used.

C. Relevancy of a Transdisciplinary Approach to the Learning/Teaching of a Second Language

The crucial question is how does this approach to learning which combines the acquisition of knowledge with the enhancement of transdisciplinary capacities relate to the teaching of a second language. Primarily, in the learning of a second language for communicative purposes, two types of learning take place: the learning of linguistic knowledge (*savoir* – which is sometimes referred to as declarative knowledge) such as vocabulary, morphology, syntax and discourse, which creates at the same time a different worldview, and also the development of the ability to use this knowledge in authentic communication (*savoir-faire* – which is referred to as procedural knowledge).

However, while learning to use the second language other transdisciplinary capacities are being developed. The learner is engaged in developing intellectual capacities such as sequencing (*Je me lève, puis je me lave*), inferencing, problem solving (*La maison où le train arrive* instead of *La gare*), hypothesis testing (*Je suis 11 ans* instead of *J'ai 11 ans*), making logical relations (*Si j'arrive avant 6 heures, je te téléphone*), analysing (making the distinction between a noun and a verb), sequencing (*Le matin, je me lève à 7 heures, je me lave et puis je mange. Après, je me brosse les dents et je me prépare pour aller à l'école*), making abstractions (*Il ne faut pas gaspiller le papier pour sauver les forêts*), making generalizations (*Un petit ballon – Une voiture rouge* compared to *Un gros cadeau – Un chandail jaune*), etc. These types of transdisciplinary capacities are developed in any second language classroom, such as core French or French immersion, where a communicative approach to learning is being used, but are enhanced in Intensive French classrooms because of the increased time and the nature of the curriculum and pedagogy.

The type of pedagogy used affects the learning in at least two different ways: the complexity of the tasks given and the type of teaching strategies. Cognitive development depends greatly on the nature and variety of the tasks performed by the learners. Capacities such as general problem solving, reasoning, using abstract concepts, and so forth, as well as those of analysing, synthesizing, thinking logically, can all be reinforced by the complexity of the activities undertaken in the second language classroom. Furthermore, the use of interactional strategies increases the reciprocal effect of social and cognitive learning (Germain, 1991). It also increases the opportunity for concomitant development of other social, personal and organizational transdisciplinary capacities. Through cooperative learning and project activities, learners are encouraged to work together. Not only does the use of these procedures develop cooperation and understanding of others, learning which assists individuals to interact successfully socially, but also enables learners to engage in more linguistically complex types of communicative activities. Another set of competencies is developed that is more personal in nature; learners develop such capacities as responsibility, initiative, and self-esteem. In undertaking project work and other types of independent study, learners also develop organizational abilities; they learn to manage time, to respect deadlines, to plan work for long and short term periods, to set goals and to use a variety of different reference works. In Appendix B the possible types of learning associated with different teaching approaches are illustrated.

It is important to realize that the development illustrated in Stage 2 of Appendix B is not possible in the regular core French classroom because of the limited time at the disposal of the teacher. Even though a communicative approach to learning may be used, because of the limited time available learners are not able to develop the same degree of linguistic knowledge or skills in the second language. Even more important, because of the short periods of time as well as the limited overall amount of time, they are not able to engage to the same depth in project type and such related activities that enable them to acquire to the same extent the other capacities discussed above. In the French immersion classroom a situation closer to that of the intensive French classroom occurs. However, in the immersion classroom, much more emphasis is placed on learning the content of the academic areas studied in the second language. Because of the emphasis on content learning, teaching strategies often tend to be more traditional and teacher-centred. To the degree that this occurs, the learning in the immersion classroom will create greater knowledge-based learning, but less enhancement of the cognitive, social, personal and organizational capacities associated with the use of interactive pedagogy and project activity.

D. Evaluation of Intensive French Project in Newfoundland and Labrador

The assessment of the effectiveness of Intensive Core French suggests that nearly all students in the Intensive French program were able “to show some spontaneity in language production and to initiate and sustain simple dialogue” (Level 3 descriptor, French 3200 oral interview protocol developed by the Department of Education of Newfoundland and Labrador). About 80% of the students, after five months of Intensive French, were able to engage in a conversation with their teacher in approximately the same way as can core French students in the Province who are finishing high school. Results for written production indicated that students were able to write in French at the same average level as native francophones in Quebec in grade 3. Eighty percent of the 13 criteria used were attained by the Intensive French students as compared to Quebec students at the grade 4 level (for further discussion on the evaluation, see Netten, Germain and Séguin, forthcoming).

At this point no quantitative measures of the effect of the Intensive French program on the development of English language skills has been undertaken. However, anecdotal evidence from teachers and principals suggests that no negative effects are indicated. A comparison of year end marks in English language arts for grade 6 for the Intensive French students with their year end marks in grade 5 does not show any noticeable deviation. Anecdotal evidence from teachers and

parents also suggests that students who were considered to be weak in English language skills have, in many cases, not only learned to communicate in French, but have also improved their ability to write in English. A study to determine factors affecting this development is currently in progress (Tobin, in progress).

No empirical study of the effects of Intensive French on the learning of other subjects has been undertaken, but anecdotal evidence from teachers suggests that no negative effects have been perceived. A comparison of year end marks in other subject areas for the Intensive French students does not indicate any major differences in subject matter attainment.

Furthermore, principals, parents and teachers have commented on the increased self-esteem and confidence of students. Students who were unwilling to take part in public performances are now willing to do so. Students who felt themselves to be weaker students now feel that they are successful students. Principals have also commented on the increased initiative and responsibility of students participating in the program. They will undertake to organize and supervise events with other students more often and more willingly than students who have not participated in the program. Teachers have also commented that students are more willing to use dictionaries, reference works and the Internet to find information, and that they are more autonomous, undertaking more independent work than would be expected for the completion of the regular curriculum.

Overall, the effects of Intensive Core French appear to be more positive than anticipated. In ability to communicate in the second language, anticipated goals were to reach the same level as students in grade 9; these goals have been reached or surpassed. In addition, many other effects of the program which were not originally anticipated have been noted. Thus, through the reorientation of the French curriculum which occurs in Intensive French as conceived for Newfoundland and Labrador, learners have the opportunity to develop increased knowledge of French, increased communicative skills in French and also to enhance many aspects of their intellectual, social, personal and organizational development.

E. The Role of Intensity in Second Language Learning

In order to explain these results, the generic definition of intensity alone (concentration of instructional time) is not sufficient. With our conception of intensity, as applied to Intensive French, results are understandable. According to our view, intensity implies both:

- a reorganization of instructional time – so that it is increased, concentrated and uninterrupted;
- a reorientation of the curriculum – so that it provides a rich second language experience and uses an interactive pedagogy.

The enhancement of the learning of L2 depends not only on the amount of instructional time in L2 but also on the curriculum and teaching strategies used. From this analysis, it may be seen that the role of intensity in the second language classroom is two-fold. To the extent that intensity implies an increase in time, greater linguistic knowledge and communicative skill development can occur. This would appear to be an application of the time on task explanation, which has some validity (Shulman, 1986). On the surface the argument appears very logical; however, it treats every subject area as if it were resting on a set of totally different and discrete competencies which have no relationship with one another. We believe the time on task explanation alone to be too simplistic. Some learning of knowledge and transdisciplinary capacities can take place without time on task at the surface level. In other words, some learning can take place without being seen at the surface level as time on task. In the learning of a second language, some learning of L1 related skills and capacities, as well as general knowledge in other subject areas and transdisciplinary capacities in the

four areas mentioned previously, occurs at the same time. Thus, intensity contributes much more than just increased instructional time for the learning of the second language. Intensity also contributes the opportunity to enrich the curriculum for second language learning. With this enrichment there is also an enhancement of general knowledge related to the topics discussed, of transdisciplinary cognitive capacities and, with the use of an interactive pedagogy, of transdisciplinary capacities related to social, personal and organizational development.

We have been led to this conclusion by the preliminary results of our research on Intensive Core French in Newfoundland and Labrador. Comparisons amongst the four initial classrooms indicated that for a classroom in which the number of hours of instruction was high (418 hours) the oral and written production skills of the students overall were less well developed than those of students receiving 200 and 300 hours of instruction. In addition, the students in these latter classrooms represented a more heterogeneous group with respect to academic abilities than those in the classroom with the greater number of hours of instruction in French. Analyses of classroom observations of teaching strategies in the classrooms indicated several differences, including more emphasis on accuracy than on the message, less emphasis on student-centred activities and greater emphasis on individual written work than on interactive activities in the classroom (Carullo, 1999).

Conclusion

In general, intensity may be understood in any educational context to be a concentration of instructional time. Defined in this way, intensity is a necessary, but not sufficient condition for the enhancement of second language learning. Intensity may also be defined as an increase in instructional time. With this definition, higher levels of language knowledge and skill development than those achieved otherwise may be expected as indicated by the time on task hypothesis. However, intensity may also be defined, as is the case in the research in Newfoundland and Labrador as a concentration of and an increase in time as well as a reorientation of the curriculum. In this third sense, intensity can be expected to bring about results that include not only the enhancement of linguistic knowledge and skills, but also of general knowledge and cognitive, social, personal and organizational transdisciplinary capacities. Intensity in this role facilitates the reorientation of the curriculum and pedagogy for second language learning. It is this concomitant condition which is necessary in order for intensity to enhance substantially the learning of a second language.

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Appendix A
Percentage of time allocated to French and other subjects

SUBJECT AREA	Dept. of Educ.	School A			School B			School C		
		SEM. ONE	SEM. TWO	MEAN	SEM. ONE	SEM. TWO	MEAN	SEM. ONE	SEM. TWO	MEAN
French	10%	78%	8%	43%	80%	10%	45%	54%	7%	30.5%
Math	16%	16%	18%	17%	14%	18%	16%	19%	24%	21.5%
Health	6%	-	7%	3.5%	-	6%	3%	-	5%	2.5%
Religion	8%	-	7%	3.5%	-	8%	4%	-	2%	1%
Science	8%	-	8%	4%	-	8%	4%	-	12%	6%
Social Studies	10%	-	10%	5%	-	10%	5%	12%	7%	9.5%
Music	6%	3%	5%	4%	3%	3%	3%	5%	4%	4.5%
Physical Ed.	6%	3%	5%	4%	3%	3%	3%	5%	5%	5%
Art	6%	-	5%	2.5%	-	6%	3%	-	2%	1%
Computer								5%	2%	3.5%
Language Arts	24%	-	27%	13.5%	-	28%	14%	-	29%	14.5%

A SOCIO-PSYCHOLOGICAL TRANSDISCIPLINARY APPROACH TO LEARNING/TEACHING A SECOND LANGUAGE

